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12. ARACHNIDA

to which are added

MEROSTOMATA, PANTOPODA, PENTASTOMIDA, TARDIGRADA,

MYRIAPODA and ONYCHOPHORA

compiled by

ERNEST BROWNING, M.B.E.

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GEOLOGICAL

Carboniferous.—Xiphos., **Vandenberghe.**

Devonian.—Eurypt. Canada, **Copeland & Bolton;** Eurypt. Ohio, **Kjellesvig-Waering;** Eurypt. Argentina, **Kjellesvig-Waering (2).**

Permian.—Eurypt. Oklahoma, **Branson;** Xiphos., Kansas, **Tasch.**

Silurian.—Eurypt., Canada, **Copeland & Bolton;** Eurypt., Welsh borderland, **Kjellesvig-Waering (1);** Eurypt., New York, **Leutze.**

ARACHNIDA

GENERAL LITERATURE AND HISTORY

Textbooks.—Palaeontology, **Termier & Termier;** Palaeozoology, **Ehrenberg;** Terrestrial Acari of the British Isles, **Evans et al;** The Mites of Stored Food, **Hughes;** Land invertebrates, **Cloudsley-Thompson & Sankey (7);** Parasitology, **Chandler & Read;** Parasitology, **Noble & Noble.**

History.—Arachnology, **Savory (1);** Zoology of Argentina, **Birabén;** Review of studies on Japanese spiders, **Yaginuma;** Early history of ticks and scabies, **Hoeppli.**

Biography.—C. ATTEMS, **Strouhal.**

Obituary.—Bozenou FOLKMANOVOU, **Lang;** John HEWITT, **M., E. D.;** J. E. HULL, **Harrison,** J. W. H.; J. E. HULL, **Turk;** Anthony MUSGRAVE, **Whitley;** Josef SCHWEIZER, **Handschin;** D. C. SWAN, **Uvarov;** D. C, SWAN, **P. & B.;** Karl VIETS, **Lundblad ;** K. H. VIETS. **Schulz.**

Bibliography.—C. ATTEMS, **Strouhal;** A. MUSGRAVE, **Whitley & Pope (1);** D. C. SWAN, **P. & B.**

Taxonomy.—Taxonomic realism, **Moreau;** Terminology of the Parasitiformes, **Kozlowski (1);** Terminology of post-embryonic stage of Acari **Martelli ;** Chaetotaxy in identification of *Argas*, **Sonenshine et al.**

Nomenclature.—Validity of Walckenaer's names of American spiders, **Levi & Levi (1);** Proposed validation of *Trombidium akamushi*, **Domrow, Uchida, Philip;** Proposed validation of *Dermacentor andersoni*, **Philip & Kohls (2);** Stabilizing nomenclature of Hydrachnellae, **Viets (1).**

Classification.—Discussion, **Hammen.**

Museums.—Pantop. in Musée océanographique de Monaco, **Belloc;** Catalogue of types of Arachnida in Collection of Natural History Museum at Basel, **Forcart;** Pentastomida of Musée du Congo and Inst. Méd. trop. Anvers, **Fain (3).**

Collections.—Revision of Micryphantidae and Linyphiidae of van Hasselt Collection, **Helsdingen.**

Vernacular names.—Australian aboriginal names for scorpion and spider, **Lindgren.**

Folklore.—Spiders and human ills, **Speight.**

STRUCTURE

External anatomy.—Terrestrial Acari, **Evans et al;** Larval and nymphal stages of Uropodina, **Krasinskaya;** *Ixodes ricinus*, **Babos & Eichler.**

Internal anatomy.—Terrestrial Acar, **Evans et al**; *Haemaphysalis flava*, **Saito & (1)**.

Integument.—Arach., **Krishnakumaran.**

Chaetotaxy.—Genital hairs of Oribatei, **Grandjean (4)**; Leg chaetotaxy of larval trombiculids, **Sasa (2)**; Trichobothria of Oribatei, **Tarman.**

Muscles.—*Archaea*, **Legendre (3)**; *Tarsonemus randsi* **Aronson.**

Circulatory system.—*Echinolaelaps echidninus*, **Jakeman.**

Alimentary system.—Oesophagus of Aran, **Legendre (1)**; *Mitopus morio*, **Phillipson**; *Echinolaelaps echidninus* **Jakeman**; *Neomolgus littoralis*, *Bryobia eharai* and *Hydryphantes affinis*, **Ehara (1)**; Argasidae, **Balashov**; *Argas vespertilionis*, **Roshdy (1)**; *Rhipicephalus appendiculatus*, **Till.**

Respiratory system.—Linyphiidae, **Merrett**; Lungbooks in Devonian Palaeocharinidae, **Claridge & Lyon**; *Echinolaelaps echidninus*, **Jakeman**; *Argas vespertilionis*, **Roshdy (1).**

Nervous system.—Arthrop, **Pringle**; *Heterometrus fulvipes* and *H. swammerdami*, **Sasirababu**; *Archaea*, **Legendre (3)**; *Echinolaelaps echidninus*, **Jakeman.**

Excretory system.—*Neomolgus littoralis*, *Bryobia eharai* and *Hydryphantes affinis*, **Ehara (1)**; *Echinolaelaps echidninus*, **Jakeman.**

Reproductive system.—*Lychas tricarinatus*, **Mathew**; *Echinolaelaps echidninus*, **Jakeman**; *Neomolgus littoralis*, *Bryobia eharai* and *Hydryphantes affinis*, **Ehara (1)**; *Argas vespertilionis*, **Roshdy (1)**; *Rhipicephalus appendiculatus*, **Till.**

Glands.—Lymph gland of *Buthus tamulus*, **George et al**; *Parasiro coiffaiti*, *Siro rubens*, **Juberthie**; Ixodidae, **Feldman-Muhsam & Havivi**; New excretory glands of ticks, **Feldman-Muhsam & Havivi (1).**

Venom glands.—*Archaea*, **Legendre (3).**

Sense organs.—Eyes of Aran, **Homann (1)**; Eyes of Oribatei, **Tarman**; Vibration receptors of *Tegenaria* and *Zygiella*, **Liesenfeld**; Vibration receptor of spiders, **Walcott.**

Special structures.—Ambulacrum of larva of *Orthohalarachne letalis*, **Popp (1)**; Egg and shell of *Petrobia latens*, **Lees**; Palpus of Theridiidae, **Levi**; Palps of male spiders, **Wiehle (2).**

Teratology.—*Xysticus transversatus*, **Anderson**; Spider gynandromorphs with list of known cases, **Kaston**; *Gamasellus silvestris*, **Halaškovà.**

Cytology.—Blood of *Buthus occitanus*, **Amourig**; Chromosomes of *Buthus occitanus*, **Guérin.**

PHYSIOLOGY

Nutrition.—Embryonic nutrition in *Lychas tricarinatus*, **Mathew**; Histological changes in gut of *Mitopus morio*, **Phillipson**; *Bryobia praetiosa*, **Morris**; Synthetic food for *Caloglyphus* sp., **Kanungo & Behura (1)**; *Macrocheles muscaedomesticae*, **Rodriguez & Wade (1)**; Prey consumption and oviposition of *Typhlodromus occidentalis*, **Chant (2)**; *Typhlodromus pyri*, **Dosse (1)**; Argasidae, **Balashov**; Storage of nutritives by Ixod., **Balashov (1).**

Osmotic relations.—Water loss by *Tetranychus telarius*, **McEnroe.**

Respiration.—*Euscorpius carpathicus* and *E. italicus*, **Dresco-Derouet.**

Senses.—Oribatei, **Grandjean (1)**; Smell of *Cupiennius salei*, **Keller.**

Secretion: external.—Defense of Uropyg. and Opil. **Eisner**; *Mastigoproctus giganteus*, **Eisner et al (1)**; Properties of spider silk, **Hackett**; Composition of fibroins of spider silk, **Lucas et al**; Wax envelope of egg of *Petrobia latens*, **Lees**; Guanine by *Tetranychus telarius*, **McEnroe (1).**

Secretion: internal.—Neurosecretion in Opil., **Naisse.**

Longevity.—*Ornithonyssus bacoti*, **Williams & Kershaw**; Influence of prey on *Typhlodromus pyri*, **Herbert**; *Tyrophagus noxius*, **Sevastianov**; Prolonging of longevity of *Rhipicephalus sanguineus*, **Achan (1).**

Metabolism.—*Tetranychus telarius*, **Mehrotra.**

Biochemistry.—Arachnida cuticle, **Krishnakumaran**; Carbonic anhydrase in spiders, **Dresco-Derouet (1)**; *Tetranychus urticae*, **Ehrhardt & Voss**; Extracts of *Ornithodoros moubata*, **Wyss-Huber et al.**

Venom.—*Androctonus australis*, **Balozet**; *Androctonus australis* and *Buthus occitanus*, **Miranda & Lissitzky**; *Centruroides sculpturatus* and *Vejovis spinigerus*, **Russell & Long (2)**; North African scorpions, **Miranda et al (1)**; Action of scorpion venom, **Balozet (1)**; Unusual method of treating scorpion stings, **Abdulali**; Treatment of scorpion stings, **Sykes**; Scorpion stings, **Mundle**; *Heterometrus cyaneus* and *Latrodectus geometricus*, **Keegan**; *Latrodectus mactans*, **Russell & (1)**; *Latrodectus tredecimguttatus*, **Bettini & Toschi-Frontali**; *Latrodectus tredecimguttatus*, **Marzan**; Effects of bite of *Loxosceles laeta*, **Schenone & Prats**; *Loxosceles rufescens*, **Pener-Solomon**; Effects of bite of *Thomisoides terrosus*, **Carcavallo**; Survey of cases of spider bites, **Bettini**; Prevention of bites of *Latrodectus lugubris*, **Arustamyan.**

Toxins.—Case histories of chigger bites, **Prince.**

Coloration.—Pigmentation in *Micrommata virescens*, **Jovančić.**

Movement.—Swimming directions of *Arrenurus*, **Jander & Waterman**; Sensory nerve terminals in arthropods, **Pringle.**

Sound production.—Scorp., **Rosin & Shulov (1).**

Effects of chemicals.—On beneficial arthropods, **MacPhee & Sanford (1)**; On eggs of *Metatetranychus ulmi*, **Meltzer**; On *Panonychus ulmi*, **Chaboussou**; On winter eggs of *Panonychus ulmi*, **MacPhee**; On *Panonychus ulmi* and *Tetranychus telarius*, **Asquith**; On *Tetranychus telarius*, **Abul-hab & Stafford**; On *Tetranychus telarius* and *Panonychus ulmi*, **Rodriguez & Campbell**; *Typhlodromus rhenanus* and *Mediolata mali*, **Parent**; On *Boophilus decoloratus*, **Whitehead**; Diapause of spider-mites, **Helle.**

Effects of temperature and humidity.—On eggs of *Tetranychus telarius*, **Harrison & Smith (1)**; *Tetranychus urticae*, **Dittrich**; On *Tyrophagus putrescentiae*, mortality and development, **Rivard & (1)**; On oribatids, **Madge.**

Diseases.—Mould fungus cause of death in ticks, **Melnihova**; Virus attacking *Panonychus ulmi*, **Steinhaus.**

DEVELOPMENT

Development.—Female of *Argyope bruennichi*, **Crome & Crome**; *Ischyropsalis luteipes* and *I. pyrenaea*, **Juberthie (2)**; *Ixodes persulcatus*, **Babenko & Rubina**; *Ixodes ricinus*, **Babos & Eichler**; *Mongaillardia callitoca*, **Grandjean (2)**; *Ophidilaeleps ponticus*, **Feider & Solomon (9)**; *Orbiculobates orbiculus* and *Plasmobates pagoda*, **Grandjean**; *Orthohalarachne chabaudi*, **Grétillat (2)**; *Spinturnix vespertilionis*, **Kozlowski & Musiel (2).**

Sperm.—Spermatozoa of *Ornithodoros moubata*, **Rothschild.**

Fertilization.—Sperm transferance in Oribatei, **Sengbusch.**

Embryology.—Nutrition in *Lychas tricarinatus*, **Mathew**; *Typopeltis stimpsonii*, **Yoshikura**; *Odiellus gallicus*, **Juberthie (1)**; *Dermanyssus gallinae*, **Kozlowski**; *Ornithodorus moubata*, **Aeschlimann**; Muscles of *Tarsonemus randsi*, **Aronson.**

Post-embryology.—Larva of *Archaea vadoni*, **Legendre (2)**; Male and female organs of *Latrodectus curacaviensis*, **Bhatnagar & Rempel**; *Eriophyes laevis*, **Schevtchenko**; Uropodina, **Krasinskaya**; Terrestrial Acar, **Evans et al.**

Metamorphosis.—Theraphosidae, **Jezequel (1).**

Life history: excl. Acari.—Pantop, **Clemençon**; *Chelifer cancroides* and *Pselaphochernes scorpioides*, **Weygoldt**; *Galeodes arabs*, **Cloudsley-Thompson (3)**; *Grammostola burzaquensis*, **Ibarra Grasso**; *Argyope bruennichi*, **Crome & Crome & (1)**; *Araniella displicata*, *Philodromus rufus*, *Philodromus cespiticolis*, *Paraphidippus marginatus* and *Metaphidippus protervus*, **Dondale (1)**; *Nemesia caementaria*, **Buchli**; *Coelotes terrestris*, **Tretzel.**

Life history: Acari excl. Ixodoidea.—*Demodex aurati*, **Nutting**; *Demodex folliculorum*, **Spickett**; *Dermanyssus gallinae*, **Romasheva**; Erythraeoidea, **Southcott**; Gamasidae, **Karg. (1)**; *Hannemania hegeneri*, **Hyland (1)**; *Hyadesia furcillipes* and *H. tumida*, **Bénard**; *Larvacarus transitans*, **Latif & Muhammad (1)**; *Macrocheles muscaedomesticae*, **Wade & Rodriguez**; *Myobia musculi*, **Wharton**; *Otodectes cynotis*, **Tonn**; *Psorergates ovis*, **Murray**; Spinturnicidae, **Rudnick**; *Tarsonemoides confusus*, *T. plastographus*, *T. radiate* and *T. truncatus*, **Lindquist & Bedard (1)**; *Tetranychus cinnabarinus*, **Davis**, D. W.; *Tetranychus urticae*, **Arčanin**; *Trombicula akamushi*, **Neal & Barnett**; Trombiculidae, **Daniel (1)**; *Tyrophagus dimidiatus*, **Miura & Sasa**; *Tyrophagus putrescentiae*, *Glycyphagus domesticus*, **Agric. res. Counc.**; Acari of stored food, **Hughes.**

Life history: Ixodoidea.—*Argas reflexus*, **Skrynnik**; *Dermacentor pictus* and *Ixodes ricinus*, **Arzamasov**; *Ixodes festai*, **Arthur**; *Ixodes ricinus*, **Babos**; *Ornithodoros* spp., **Pavlovsky & Skrynnik**; *Rhipicephalus appendiculatus*, **Till**; Ticks in general, **Drummond.**

Diapause.—*Panonychus citri*, **Shinkaji (1).**

Growth.—*Vejovis spinigerus*, **McAlister (1)**; Eyes of Aran, **Homann (1).**

Moult.—*Pamphobeteus* sp., **Kraus.**

Teratology.—Spider gynandromorphs with list of known cases, **Kaston**; *Xysticus transversatus*, **Anderson**; *Gamasellus silvestris*, **Halašková.**

REPRODUCTION AND SEX

Reproduction.—*Ischyropsalis luteipes* and *I. pyrenaea*, **Juberthie (2).**

Oviparity.—*Latrodectus geometricus*, **Bouillon & Lekie**; *Petrobia latens*, **Lees**; *Rhipicephalus sanguineus*, **Achan**; Influence of prey on *Typhlodromus pyri*, **Herbert.**

Sex ratio.—*Phyllocoptruta oleivora*, **Swirski & Amitai.**

Parthenogenesis.—*Dameobelba minutissimus*, **Grandjean (1)**; Terrestrial Acar, **Evans et al**; *Rhipicephalus appendiculatus*, **Brocklesby & Bailey**; Cytology of parthenogenesis, **Peacock & Weidmann.**

EVOLUTION AND GENETICS

Evolution of taxonomic groups.—Arthropoda, **Nielsen**; Acar, **Grandjean (1)**; Mites, **Woolley**; Acari parasites, **Zumpt**; Acariformes, **Knülle.**

Evolution of organs.—Palpal sclerites of Theridiidae, **Levi**; Subcoxal theory in Tracheata, **Becker & (1).**

Variation.—Age of characters in Solif. **Panouse (3)**; *Hygrobates longiporus*, **Viets**, K. O. (2); Scutal variations in *Neoschöngastia gallinarum*, **Wen & Jeu.**

Mimicry.—*Xysticus ulmi* and *Misumena vatia*, **Tyshchenko.**

Chromosome studies.—*Buthus occitanus*, **Guénin**; *Palamnaeus longimanus*, **Srivastava & Agrawal & (1)**; Scorp., **Piza & (1), (2), (3), (4)**; *Loxosceles rufescens* and *L. rufipes*, **Beçak & Beçak (1).**

ECOLOGY AND HABITS

Ecology.—*Bothriurus*, **Matthiesen (1)**; *Euscorpius carpathicus*, **Táborský**; Schizomidae, **Remy (2)**; *Coelotes terrestris*, **Tretzel (1)**; Web-building spiders, **Palmer**; Black currant gall mite, **Collingwood & Brock (1)**; *Bryobia recki* and *Tetranychus urticae*, **Antonova**; Gamasidae, **Karg (1)**; Hyadesidae, **Bénard**; Hydrach. of North America, **Crowell (1)**; *Haemaphysalis*, **Sarthaev**; *Ixodes ricinus*, **Babos & Eichler**; *Ixodes ricinus*, **Kolpy**; *Lohohalacarus weberi quadriporus*, **Teschner**; *Orthohalarachne chabaudi*, **Grétillat (2)**; Trombiculids, **Sasa**; A mountain stream **Hynes**; Running Stream, **Zelinka & Marvan**; A brook, **Schwoerbel**; Acari of stored food, **Hughes.**

Biology.—*Coelotes terrestris*, **Tretzel**; *Tetranychus cinnabarinus*, **Davis**, D. W.; *Ixodes persulcatus* and *I. trianguliceps*, **Shluger**, I. S.

Bionomics.—Trombiculidae, **Daniel (1)**; *Ixodes ricinus*, **Rosický et al (1).**

Soil ecology.—Acari of soil of forest, **André (7)**; Oribatids under *Quercus* and *Pinus* stands, **Aoki**; Old field community, **Engelmann**; Acar. of forest, **Hartenstein**; Survey of soil animals, **Kühnelt (1)**; Oribatid of bog, **Tarras-Wahlberg**; Arach., **Verner**; Aran., Acar., **Schönborn**; Acar., **Forsslund**; Acar., **Führer**; Acar., **Hüther**; Acar. and Tardig., **Karg**; Acar., **Kevan**; Acar., **Kühnelt**; Acar., **Ryke (3)**; Acar., **Sitnikova**; **Bödvarsson**; **Desoö.**

Ecological associations: excl. Acari.—Aran. of arctic tundra, **Chernov**; Aerial retreats of Aran, **Decary**; Aran. of oak and pine woods, **Crowson**; Moorland spiders, **Cragg**; Aran. of Sphagnum, Carex zone and shore sand, **Casemir (3)**; Spider fauna of foreshore, **Heydemann**; *Pellenes nigrociliatus bilunulata* inhabiting snail shells, **Mikulska (1)**; Aran., Opil from nest of pied flycatcher, **Silvero**; Opil. and Aran., associated with flowering skunk cabbage, **Judd.**

Ecological associations: Acari.—Variations of associations of Acari, **Evans et al**; Veigaiadae associated with rodent nests, **Bregetova**; Tyroglyphids from nests of rodents, **Volgin (1)**; Tyroglyphids from nests of rodents and insectivous mammals, **Vysotzkaya**; *Longoseius cuniculus* in galleries of Monochamus notatus [Coleop.], **Chant**; *Haemagamasus hodosi* in nest of Marmota sibirica, **Goncharova & Buyakova**; Hydrach., Tardig. of thermal water, **Matoničkin**; Acari associated with South African plants, **Meyer & Ryke**; Trombidiformes associated with South African plants, **Ryke & Meyer (7).**

Ecological associations: cavernicolous.—Arach., **Barr**; Arach., **Lindberg**; Palpig, **Remy (1)**; Aran., **Denis**; Aran., Opil., **Dresco & (2)**; Aran., **Dresco (4)**; *Koenenia vagvolgyii* and *Porhomma* cf. *rosenhaueri*, **Loksa**; Aran., **Hazelton**; *Meta menardi* and *Nesticus cellulanus*, **Tercafs**; Pseudoscorp., Hydrach., **Motas**.

Distribution.—Scorp. in Uruguay, **San Martin**; Charontidae, **Kraus (2)**; Schizomidae, **Remy (2)**; *Ischyropsalis* in Europe, **Juberthie (2)**; *Atypus karschi*, **Furunuchi**; Argasidae in France and North Africa, **Colas-Belcour & Rageau**; *Panonychus citri*, **Shinkaji**; *Dermacentor marginatus*, **Melnihova**; *Ixodes ricinus*, **Öhman**; Ixod., **Adamovich**; Oribatids, **Eitminavichiute & (1)**; Oribatids, **Sitnikova**; Horizontal and vertical distribution of Oribatids, **Frank & Zivkovitch (1)** ; Horizontal and vertical distribution of Hydrach., **Schwoerbel (1)**.

Habitat.—*Grammostola burzaquensis*, **Ibarra Grasso**; Unusual site of *Stegodyphus sarasinorum*, **Phanuel**; *Telema tenella*, **Bonnet (1)**.

Survival.—*Ornithonyssus bacoti*, **Williams & Kershaw**; *Thermocarus nevadiensis*, **Phelps**; *Boophilus microplus*, **Hall & Wilkinson**; *Ixodes kingi*, **Elzinga & Rees (1)**.

General habits.—*Galeodes arabs*, **Cloudsley-Thompson (3)**; *Atrax robustus*, **Levitt**; Hunting-spiders, **Brock & Schmidt**; *Alectorobius alactagalis* and *A. nereensis*, **Pospelova-Shtrom**; Spinturnicidae, **Rudnick**.

Feeding habits: excl. Acari.—*Tityus bahiensis* and *T. serrulatus*, **Matthiesen (2)**; *Galeodes arabs*, **Cloudsley-Thompson**; *Chelifer cancroides* and *Pselaphochernes scorpioides*, **Weygoldt**; *Phalangium opilio* feeding on Vespula vulgaris (wasp), **Whiteley**; Capture of prey by *Archaea* spp., **Legendre**; *Atrax robustus* **Levitt**; *Coelotes terrestris*, **Tretzel & (1)**; *Grammostola burzaquensis*, **Ibarra Grasso**; *Meta menardi* and *Nesticus cellulanus* feeding on diplopods, **Tercafs**; *Myrmarachne innermichelis*, **Komatsu**; *Nemesia caementaria*, **Buchli**; *Ostearius melanopygius*, **Braun (3)**; *Scytodes intricata*, **McAlister**; *Theridium saxatile*, **Freisling**; *Macrobiotus* sp. attacking nematodes, **Donacaster & Hooper**.

Feeding habits: Acari.—Terrestrial Acar., **Evans et al**; *Allothrombium mitchelli* feeding on balsam woolly aphid, **Davis, R.**; Gamasidae, **Karg (1)**; *Glycholaspis confusa* and *Macrocheles muscaedomestica* on house fly eggs and larvae, **Axtell (1)**; *Macrocheles glaber* and *M. plumiventris*, **Haq**; Macrochelidae predacious on house flies, **Axtell**; *Myobia musculi*, **Wharton**; Parasitiformes, **Karg. (2)**; *Pseudotritia ardua*, **Führer**; Prey consumption of *Typhlodromus occidentalis*, **Chant (2)**; *Typhlodromus pyri*, **Dosse (1)**; *Argas reflexus*, **Skrynnik**; *Ixodes triangulicep*s, **Nikitina**.

Mating habits.—*Leiurus quinquestriatus*, **Cloudsley-Thompson (4)**; *Tityus bahiensis*, **Matthiesen**; *Tityus bahiensis* and *T. serrulatus*, **Matthiesen (2)**; *Galeodes arabs*, **Cloudsley-Thompson (3)**; *Argyope bruennichi*, **Crome & Crome & (1)**; *Atrax robustus*, **Levitt**; *Coelotes terrestris*, **Tretzel & (1)**; *Ixeuticus longinuus*, **Gregg**; *Linyphia marginata*, **Proszynski (1)**; *Nephila madagascariebsis*, **Charézieux**; *Ostearius melanopygius*, **Braun (3)**; *Tegenaria*, **Savory**; Terrestrial Acar., **Evans et al**; *Arrenurus globator*, **Böttger & Schaller**.

Web construction.—American spiders, **Palmer**; *Coelotes terrestris*, **Tretzel**; *Drapetisca socialis*, **Kullmann**; *Theridium saxatile*, **Freisling**; *Uloborus plumipes* and *U. walckenaerius*, **Szlep**.

Construction of cocoon and care of eggs.—*Argyope bruennichi*, **Crome & Crome & (1)**; *Cyrtophora citricola* **Kullmann (1)**; Eggs of *Pellenes nigrociliatus bilunulata* deposited in shells of *Helicella caudicans*, **Chopard**; *Pellenes nigrociliatus* var. *bilunulata*, **Mikulska**; *Ostearius melanopygius*, **Braun (3)**; *Theridium saxatile*, **Freisling**.

Population studies.—Pseudoscorp., **Kobachidze**; Aran. **Heydemann (2)**; Micryphantidae, **Heydemann (3)**; Gamasidae, **Karg (1)**; *Panonychus citri*, **Jeppson et al**; *Tyrophagus*, **Robertson**; Oribatei, **Rajski**; *Dermacentor marginatus*, **Melnihova**; *Haemaphysalis leporispalustris*, **Mohr (1)**; *Ixodes pomeranzevi*, **Slonov**; *Ixodes ricinus*, **Babos & Eichler**; Ixod. on rabbit, **Mohr & Lord**; Ixod., **Černý (2)**; Acari on rats, **Fox & Garcia-Moll**; Ectoparasites and nest inhabitants, **Beklemischev**.

Enemies and defence.—Spray defence of *Mastigoproctus giganteus*, **Eisner et al (1), (2)**; Spitting habit of *Scytodes intricata*, **McAlister**; *Voconia* sp. preyed on by *Pseudagenia* sp. (Pompilid), **Rayment**; *Raoiella indica* preyed on by coccinellid, **Kapur**; Of *Metatetranychus ulmi*, **Dosse (2)**; Araneae and Insecta feeding on predatory mites, **Krämer**; Hepatozoon sp. in *Haemolaelaps aegyptius*, **Hoogstraal (1)**; *Sperchon* nr. *jasperensis* infected with *Nosema* sp., **Davies**; *Hunterellus theilerae* (Chalcidoidea) parasitizing *Hyalomma*, **Hoogstraal & Kaiser (2)**; Micro-organisms in ticks, **Roshdy (2)**.

Phoresy.—*Fuscuropoda marginata* on wasp, *Pilinothrix designata*, **Rack & Weidner** ; *Microlichus avus*, *M. uncus*, *Myialges anchora*, and *Acarus siro* off Hippoboscidae, **Corbet**; *Myianoetus muscarum* on Musca stabulans, **Greenberg**; *Pronematus pyrrohippeus* on moths, **Treat**.

Commensalism.—Acar. with Insecta and Myriap., **Dollfus**.

Symbiosis.—*Arctoseius* spp., **Lindquist**; Saproglyphidae and Vespidae, **Krombein**.

Parasitism: Mammalian hosts: Mesostigmata.—*Haemolaelaps hirstionyssoides* off Spalax ehrenbergi: *Haemolaelaps androgynus caluri* off Sekeetamys calurus: *Haemolaelaps ovalis* off Meriones tristrami: *Hirstionyssus ellobii spalacis* off Spalax ehrenbergi and Mus musculus: *Laelaps acomydis* off Acomys cahirinus and off Sekeetamys calurus, Meriones tristrami: *Laelaps agilis longispinosus* off Apodemus sylvaticus: *Ornithonyssus nitedulae* off Dryomys nitedula, **Costa (1)**; *Hirstionyssus callosciuri* off Callosciurus erythreus erythrogaster: *H. indosinensis* off Rattus sabanus, off Suncus murinus, off Callosciurus macclellandi and C. swinhoei: *Rhyzolaelaps inaequipilis* off Rhyzomys priunosus, off Rattus concolor, off R. rattus flavipectus and off R. sumatrensis cinereus, **Bregetova & Grokhovskaya (1)**; *Cosmolaelaps diversichaetatus* off Rattus r. flavipectus, R. sabanus, Crocidura dracula: *Haemolaelaps vietnamensis* off Suncus murinus: *Laelaps taingueni* off Rattus r. flavipectus: *L. hongaiensis* off Rattus sabanus, Rattus r. sladeni: *L. myonyssognathus* off Rattus r. flavipectus: *Langeonyssus tieni* off Hipposideros armiger and off Rhinolophus pearsoni, **Grokhovskaya & Nguen-Xuan-Hoe**; *Dermanyssus gallinae* attacking man, **Agafonova & Tataurova**; *Dermanyssus gallinae* attacking man, **Alifanov**; *Dermanyssus gallinae* attacking man, **Semushkina**; *Haemolaelaps travisi* off Rattus sp., **Delfinado**; *Laelaps breviseta* and *L. mackerrasi* off Rattus assimilis: *Cytostethum clibanarius* and *Haemolaelaps quartus* off Aepyprymnus rufescens: *Cytotethum moschati*, *C. parvum* and *Trichosurolaelaps harrisoni* off Hypsiprymnodon moschatus: *Austrochirus trouessarti* and *Pneumonyssus dentatus* off Antechinus flavipes godmani: *Austrochinus mcmillani* off bandicoot: *Raillietia australis* off Phascolomis mitchelli: *Haemolaelaps ulysses* off Pseudocheirus peregrinus laniginosus: *Laelaps calabyi* off Pseudomys

higginsi: *Cytostethum mollisoni* off Potorous tridactylus: *Neolaelaps vitzthumi* off Pteropus scapulatus, **Domrow (1)**; *Paraspinturnix globosus* off Myotis sodalis: *Spinturnix bakeri* off Eptesicus fuscus bernardinus: *S. banksi* off Myotis grisescens: *S. mexicanus* off Pizonyx vivesi: *S. multisetosus* off Myotis goudotii: *S. orri* off Antrozous pallidus pacificus, **Rudnick**; *Orthohalarachne chabaudi* off Arctocephalus gazella, **Gretillat (1)**; *Orthohalarchne letalis* off Zalophus californianus, **Popp & (1)**; Gamasoidea of small mammals, **Daiter.**

Parasitism: Mammalian hosts: Prostigmata.—*Doloisia inca*, *Euschöngastia euryphylla*, *E. wenzeli* and *Trombicula cuzcöensis* off Oryzomys keaysi: *Euschöngastia insolita* and *Trombicula olympia* off Phyllotis phaeus: *Euschöngastia tryssa* and *Trombicula oligochaeta* off Proechimys hendeei: *Euschöngastia herniosa* off Lagidium peruanum: *Euschöngastia reversa* off Hesperomys ducilla: *Fereus bisetifer* off Thomasomys sp.: *Odontacarus kofordi* off Chinchillula sahamae and off Abrocoma cinerea: *Trombicula chaetosa* off Tropidurus peruvianus: *Trombicula macrochaeta* off Neotomys ebriosus: *Trombicula quintangula* off Phyllotis sp.: *Trombicula sternalis* off Ctenomys peruanus, **Brennan & Jones**; *Aniatrus bifax* off Dasypus novecinctus: *Ascoschöngastia dyscrita* off Liomys adspersius; *Euschöngastia cunctata* off Oryzomys talamacae: *E. spissa* off Peromyscus nudipes: *E. tragulata* off Nasua narica: *Hoffmannina handleyi* off Peromyscus nudipes, off Scotinomys teguina, off Reithrodontomys mexicanus, off Heteromys desmarestianus: *Odontacarus fieldi* off Zygodontomys cherriei, off Sigmodon hispidus: *Polylopadium kramisi* off Liomys adspersus, off Proechimys semispinosus: *Trombicula caccabulus* off Peromyscus, off Oryzomys fulvescens, off Reithrodontomys mexicanus, off Scotinomys teguina: *T. chiriquensis* off Scotinomys teguina, off Peromyscus, off Reithrodontomys sp.: *T. cribanus* off Proechimys semispinosus: *T. dicrura* off Peromyscus nudipes, off Oryzomys sp., off Heteromys desmarestianus, off Scotinomys teguina, off Sciurus granatensis: *T. keenani* off Peromyscus nudipes, off Oryzomys, off Scotinomys teguina, off Reithrodontomys mexicanus, off Sciurus granatensis: *T. liomys*, off Liomys adspersus: *T. tiptoni*, off Peromyscus nudipes: *Vanidicus tricosus* off Liomys adspersus, **Brennan & Jones (1)**; *Alexfainia chilonycteris* and *Vergrandia galei* off Chilonyteris rubiginosa fusca, **Yunker & Jones (2)**; *Cheyleticlla parasitivorax* on dogs, **Reed; Kral & Uscavage**; *Crotiscus desdentatus tissoti* off agouti: *Pseudoschöngastia myoproctae* off Myoprocta acouchy: *Schöngastia neotropicalis* and *Trombicula palmigera* off Dasyprocta aguti, **Fauran**; *Demodex aurati* off Mesocricetus auratus, **Nutting**; *Demodex caprae* off goats, **Kurtpinar**; *Doloisia alata*, *D. fulminans* and *Traubacarus giganteus* off Rattus grochovskii, **Shluger et al (1)**; *Neotrombicula comata* off Isoodon macrourcus: *Trombicula alticola* off Rhinolophus megaphyllus, **Domrow (1)**; *Schoutedenichia laviopierrei* off Praomys tullbergi: *S. pazolis* off Cricetomys gambianus, **Taufflieb**; *Acomatacarus maroccanus* off Orytcolagus cuniculus, and off Lemniscomys barbarus: *Neotrombicula ceccaldii* off Sylvaemus sylvaticus hayi, off Mustela numidica, off Mus spretus, off Rattus rattus, and off Lemniscomys barbarus: *Helenicula dipodilli* off Dipodillus campestris, **Taufflieb (1)**; *Neotrombicula roubaudi lemni* off Lemniscomys barbarus, off Eliomys mumbyanus, off Sylvaemus sylvaticus, off Mus spretus, off Oryctolagus cuniculus, off Dipodillus campestris, off Rattus rattus and off Mustela numidiana: *N. roubaudi orycti* off Oryctolagus cuniculus, off Lemniscomys barbarus, off Rattus rattus and off Dipodillus campestris: *Trombicula cherrata* off Rhinolophus ferrumequinum, **Taufflieb (2)**; *Psorergates muricola* off Lophuromys aquilus and off Otomys irroratus elgonis, **Fain**; *Speleognathopsis bastini* off Eptesicus fuscus (bat), **Hyland & Ford (2)**; *Trombicula caballeroi* off Neotoma ferruginae chamula, off Peromyscus boylei levipes, **Hoffmann (1)**; *Trombicula gardellai* and *T. southardi* off various rodents, **Kardos**; *Whartonia guerrerensis* off Mormops megalophylla (bat) and *W. sororensis* off Pizonyx vivesi (bat), **Hoffmann.**

Parasitism: Mammalian hosts: Cryptostigmata.—*Bakeracarus lasionycteris corynorhini* off Corynorhinus rafinesquii, **Fain (1)**; *Chirodiscoides caviae* off Cavia *porcellus*, **Stroh**; *Myocoptes musculinus* on mouse, **Watson**; *Mysarcoptes paucipilis* off Pelomys fallax, **Lawrence (1)**; *Nycteridocoptes hoogstraali* off Triaenops afer, **Fain (16)**; Scabies on man, **Maguire & Kligman**; *Sarcoptes scabiei suis* off pigs, **Brownlie & Harrison**; *Sarcoptes scabiei* off Martes pennanti, **O'Meara et al**; *Teinocoptes domrowi* off Pteropus conspicillatus, **Domrow (14).**

Parasitism: Mammalian hosts: Metastigmata.—*Argas afghanistaniensis* off Rhinopoma microphyllum (bat), **Dias (2)**; *Amblyomma mudaliari* off cattle, **Rao et al**; *Amblyomma testudinarium* on man, **Kawashima et al**; *Ixodes bakeri* off Otomys sp., **Arthur & Clifford (4)**; *Ixodes paradoxus* off Cheiromeles torquator, **Kohls & Clifford (1)**; *Ixodes pospelovae* off Miniopteris schreibersi, **Drenski**; Ixod. off badger, **Thompson (1)**; Ixod. off beaver, **Lawrence et al**; Ixod. of domestic stock, **Feldman-Muhsam & Saturen (2)**; *Ixodes* off small mammals, **Blanc & Bruneau (1)**; Ixod. of *Lepus tolai*, **Grebenyuk.**

Parasitism: Mammalian hosts: General.—Acar. off bats, **Fain (5)**; Acar. off bats, **George & Strandtmann (2)**; Acar. off bats, **Jameson**; Acar. off beaver, **Lawrence et al**; Acar. off shrew, *Blarina brevicauda*, **Boyd & Dunning**; Acar. off shrew, *Crocidura suaveolens*, **Sosnina**; Acar. off marmots, **Allred**; Acar. from nests of *Microtus guentheri*, **Costa**; Acar. from nests of ordents, **Petrov & Lyutov.**

Parasitism: Reptilian and Amphibian hosts.—*Geckobia uenoi* off Eublepharis splendens, **Kawashima & Kamo**; *Lawrencarus afrixali* off Afrixalus fulvovittatus leptosomus and Hyperolius castaneus: *L. americanus* off Hyla septentrionalis: *L. brasiliensis* off Cyclorhamphus asper: *L. caretobatrachi* off Ceratobatrachus guentheri: *L. domrowi* off frog: *L. hylae* off *Hyla* species, **Fain (12)**; *Entonyssus javanicus* off Natrix vittata: *E. philippinensis* off Fordonia leucobalia and off Natrix piscator, **Fain (13)**; *Asiatolaelaps evansi* off Elaphe melanura and E. flavolineata: *Hemilaelaps caheni* off Bitis nasicornis and off Naja melanoleuca: *Hemilaelaps causicola* off Causus rhombeatus: *Hemilaelaps javanensis* off Lycodon subcinctus: *Hemilaelaps novae-guineae* off Dendrophis calligaster salomonis: *Ixodorhynchus fonsecae* off Xenodon guentheri: *Ixodorhynchus johnstoni* off Heterodon c. contortrix: *Scutanolaelaps upembae* off Boaedon l. lineatus: *S. schoutedeni* off Boaedon fuliginosus: *Strandtibbettsia brasiliensis* off Siphlophis pulcher, **Fain (18)**; *Omentolaelaps mehelyae* off Mehelya capensis savorgnani and M. poensis, **Fain (19)**; *Haemolaelaps natricis* off Natrix natrix, **Feider & Solomon (11)**; *Sauronyssus saurarum* off Lacerta spp., **Feider & Solomon (8)**; *Ophidilaelaps ponticus* off Natrix natrix, **Feider & Solomon (10)**; *Ophionyssus natricis* off Malpolon monspessulanus, off Natrix maura, and off Coluber hippocrepis, **Blanc & Ascione**; Ixodes off lizards, **Blanc & Bruneau (1)**; Acar. off reptiles, **George (1)**; *Hirstiella stamii* off Iguana iguana, **Jack**; *Pterygosoma adramitana* off Agama adramitana: *P. caucasica* off Agama caucasica: *P. foliosetis* off Charasia dorsalis: *P. mutabilis* off Agama mutabilis, A. pallida, A. inermis and A. jayakari: *P. sinaita* off Agama sinaita: *P. singularis* off Agama colon-

arum, **Jack (1)**; *Acomatacarus maroccanus* off Agama bibroni: *Neoschöngastia pastoriana* and *Schoutedenichia geckobia* off Tarentola m. mauritanica, **Tauffliеb (1)**; *Eutrombicula maura* off Eremias guttulata: *E. meridialis* off Stenodactylus mauritanicus: *Neoschöngastia blanci* and *Odontacarus agamae* off *Agama bibroni*, **Tauffliеb (2)**; *Amblyomma laticaudae* off Laticauda colubrina, **Rageau & Vervent (1)**.

Parasitism: Avian hosts: Mesostigmata.—*Diplolaelaps ubsunuris* off Allactaga sibirica, **Zemskaya & Piontkovskaya**; *Haemolaelaps casalis* on fowl, **Alwar & Lalitha**; *Larinyssus benoiti* and *Neoboydaia galachrysiae* off Galachrysia cinerea, **Fain (15)**; *Larinyssus petiti* off Geilochelidon nilotica: *Rallinyssus strandtmanni* off Gallinula chloropus, **Gretillat (3)**; *Mesonyssus belopolskii nycticoracis* off *Nycticorax nycticorax*, **Fain (2)**; *Neonyssus triangulus* off Zenaida asiatica, **Strandtmann**; *Periglischurus triaenopsis* off Triaenops afer, **Benoit**; *Ptilonyssus constrictus* off Dendroica c. coronata, **Ford**; *Ptilonyssus mimi* off Mimus polyglottos: *P. perisorei* off Perisoreus canadensis: *P. phainopeplae* off Phainopepla nitens: *P. richmondenae* off Richmondena cardinalis: *P. salpinctis* off Salpintes obsoletus: *P. sialiae* off Sialia currucoides: *P. tachycinetae* off Tachycineta bicolor, **George**; *Rallinyssus gallinulae* off Gallinula chloropus, **Fain (8)**; *Steatonyssus primus* + *S. secundus* both off Scotophilus kuhli and off Cynopterus sphinx, **Grokhovskaya & Nguen-Xuan-Hoe**; *Sternostoma longisetosa* and *Tyranninyssus spinosus* off Tyrannus tyrannus, **Hyland**; *Sternostoma sialiphilus* off Sialia sialis, **Hyland & Ford (4)**; *Trichonyssus womersleyi*; off Chalinolobus gouldi, **Womersley (5)**.

Parasitism: Avian hosts: Prostigmata.—*Boydaia buphagi* off Buphagus africanus: *Ptilonyssus mariacastroae* off Chrysolampis mosquitus: *Sternostoma bruxellarum* off Sturnus vulgaris, **Fain (10)**; *Neoschöngastia asakawai*, *N. okuboi* and *Trombicula scutellaris* off rockhead, **Sasa & Osada (4)**; *Neoschöngastia ornata* off Riparia riparia, **Shluger**; *Neoschöngastia ripariae* off Riparia riparia, **Shluger & Zhmaeva**; *Trombicula arremonops* off Arremonops conirostris, **Brennan & Jones (1)**; *Trombicula parvula* off toucan (Selenidera sp.), **Fauran**; *Womersia strandtmani* on ducks, **Clark & Stotts**.

Parasitism: Avian hosts: Cryptostigmata.—*Alloptoides acanthodiscus* off Sarcidiornis africana: *Cryptosikya protalgoides* off Limnocorax flavirostris: *Magimelia dolichosikya* off Xiphidiopterus albiceps: *Mouchetia dolichosikya* off Zosterops pallida: *Rectijanua radfordi* off Pteronetta hartlaubi: *Taeniosikya ancylophylla* off Ibis ibis, **Gaud**; *Colinoptes cubanensis* off Colinus virginianus, **Fain (6)**; *Dermoglyphus alvari* and *Megninia bakeri* off poultry, **Gaud (3)**; *Gabucinioides microdiscus* off Ardeotis arabs stibieri and off Lissotis melanogaster: *Gymnolichus anadorus* off Macrodipteryx longipennis, **Gaud & Mouchet (2)**; *Teinocoptes asiaticus* off Cynopteris brachyotis, **Fain & Domrow (22)**; *Proctophyllodes mirus* off Garrulus glandarius: *P. robustipenis* off Sylvia nisoria: *P. sittae* off Sitta europaea, **Černý**; *Proctophyllodes cardifolius* off Phoenicurus ochruros: *P. clavatus* off Sylvia curruca and off Certhia brachydactyla: *P. motacillae* off Motacilla alba and off M. cinerea: *P. vitzthumi* off Sitta europaea caesia: *P. stylifer ateri* off Parus ater, **Fritsch**; *Trouessartia liberiana* off Corvus albus, **Gaud (1)**.

Parasitism: Avian hosts: Metastigmata.—*Argas brevipes* off birds, **Kohls et al (3)**; *Ixodes auritulus zealandicus* from nest of Pelecanoides urinatrix, **Dumbleton**; *Ixodes subterranus* of Pedrus domesticus griseogularis, **Filippova (1)**; Ixod. of migrating birds from Africa, **Hoogstraal et al (4)**.

Parasitism: Invertebrate hosts.—*Acarapis* on honey bees, **Eckert (1)**; *Acarapis* on bees, **Banks**; *Acotyledon absoloni*, *A. lishihmeii* and *Hypoaspis hrdýi* off termites, **Samšiňák**; *Arrenurus fissicornis* off dragonflies, **Mitchell**; *Brachytremella bornemisszai*, *Brachytremelloides striata* and *Lombardiniella lombardinii* off Passalid, Aulacocyclus edentulus: *Brachytremella trägårdhi* off Mastochilus sp., **Womersley (3)**; *Cheletophyes theodoridis* off Selinus abacoides (Coleopt.), **Samšiňák (1)**; *Cosmolaelaps ? novus* and *Imparipes formicarum* off Acaromyrmex lundi: *Macrocheles subbadius* off Atheucus sp., **Lombardini (2)**; *Diplothrombium moldavicum* off tipulid, Dicranota bimaculata, **Feider (2)**; *Melichares daci* off culture of fruit flies, **Narayanan & Ghai**; *Myrmonyssus phalaenodectes* off moths, **Braun (1)**; *Myrmonyssus phalaenodectes* off moth, **Treat (1)**; *Rainbowia imperator* off psyllids, **Southcott**; *Saintdidieria neoorbinella* off Hister latipes, **Ryke**; *Tarsonemoides* spp. associated with bark beetles, **Lindquist & Bedard (1)**; *Vidia cooremani* off Chilocorus cacti, **Thomas**; Mites of bees, **Brimblecombe & Roff**; Larval Hydrach. on insects, **Böttger & Schaller**.

Parasitism: Plant hosts.—*Phytoseius minutus* off Hibiscus esculentus: *Typhlodromus confusus* off sunflower: *T. orientalis* off Ipomea and cotton, **Narayaran et al (2)**; *Brevipalpus aepi* off Eupatorium hemiteropodum: *B. alternatus* off Conocarpus erecta: *B. ardesiae* off Ardesia revoluta: *B. cochlospermi* off Cochlospermum sp.: *B. combreti* off Combretum farinosum: *B. cordiae* off Cordia boissieri: *B. edax* off Cordia eleagnoides: *B. encinarius* off Quercus sp.: *B. gliricidiae* off Gliricidia sepium: *B. physali* off Tridax procumbens: *B. pocillator* off Verbesina ?: *B. proboscidius* off Liabum glabrum v. hypoleucum: *B. rostratus* off Myrica mexicana, **De Leon**; *Brevipalpus bumeliae* off Bumelia sp.: *B. conocarpi* off Conocarpus erecta: *B. dipholisi* off Dipholis salicifolia: *B. fraxini* off Fraxinus profunda: *B. guettardae* off Guettarda scabra: *B. gumbolimbonis* off Bursera simaruba: *B. janeae* off Aureolaria flava reticulata: *B. judiciarius* off Thuja occidentalis: *B. jussiaeae* off Jussiaeae sp.: *B. lysilomae* off Lysiloma bahamensis: *B. obovoides* off Forestiera porulosa and off Eugenia buxifolia: *B. ocoteae* off Octea coriacea: *B. psychotriae* off Psychotria sp.: *B. pycnanthemi* off Pycnanthemum pycnanthemoides; *B. styxus* off Solanum bahamense: *B. tiliae* off Tilia heterophylla, **De Leon (3)**; *Acaricalus halli* and *Bucculacus kaweckii* off Quercus robur: *Aculus sarothamni* off Sarothamnus scoparius: *Epitrimerus umbonis* off Galium mollugo: *Tetra forsythiae* off Forsythia suspensa: *Tetraspinus lentus* of Syringa vulgaris, **Boczek**; *Aceria byersi* off Cucurbita foetidissima: *Aculus morgani* off Rhus glabra: *Aculus lobuliferus* off Populus deltoides: *Aculus caryfoliae* off Carya ovata: *Heterotergum tuttlei* off Trixus californicus: *Oxypleurites philadelphi* off Philadelphus lewisi: *Phyllocoptes cribratus* off Diospyros virginiana: *Pseudojohnella ajoensis* off Quercus ajoensis, **Keifer**; *Aceria distichli* and *A. rothi* off Distichlis spicata: *Aculus nielseni* off Juglans cinerea: *Cecidophyes harperi* off Rhamnus californicus: *C. collegiatus* off Acer platanoides: *Cenalox nyssae* off Nyssa sylvatica: *Epitrimerus achilleae* off Achillea millefolium: *Notalox rubigator* off Acer saccharinum: *Phaulacus apalachi* off Castanea dentata, **Keifer (1)**; *Achaetocoptes quercifolii* off Quercus cerris and *Anthocoptes cornicola* off Cornus sanguinea, **Farkas**; *Aceria grewiae* off Grewia plagiophylla: *A. clerodendronis* off Clerodendron eriophyllum: *Cecidophyes rumicis* off Rumex nervosus: *Eriophyes lepidaturi* off Lepidaturus laxiflorus: *Vasates baccaureae* off Baccaurea Standtii, **Farkas (1)**; *Bryobia dubinini* off Viburnum: *B. nasrvasensis* off Achillea: *Petrobia dzhulfaensis* off Eurotia ceratoides, **Bagdasaryan**; *Myzonychus acaciae*, *Prone-*

matus sensillaris, P. karrooi, Tenuipalpus acaciae, Tydeus potchefstroomi, Vasates acaciae all off Acacia karroo, **Ryke & Meyer (5)**; *Oligonychus indicus* on jowar, **Venkatraman & Sharma**; *Phytoptus goniothorax malinus* off apple tree, **Docters van Leeuwen**; *Steneotarsonemus violae* off Viola cornuta, **Schaarschmidt**; *Vasates lycopersici* off tomato, **Anon (1)**; Eriophyid on mango, **Puttarudriah & Channa Basavanna**; Eriophyidae of South Africa, **Ryke & Meyer (6)**; *Rhizoglyphus echinopus* off garlic, **Tomašević**; *Schwiebea wainsteini* off Ulmus foliacea, **Kadzhaya (1)**; Acari on citrus, **Muma (1)**; Acari on citrus, **Muma et al (2)**; Acarine predators on citrus, **Muma et al (2)**.

Intermediate hosts.—Acar. as hosts of cestodes, **Evans et al**; Oribatid vectors of sheep tape-worms, **Kuznetsov**; Oribatids as intermediate hosts of cestodes, **Wallwork & Rodriguez (5)**.

Parasitism: Pentastomida.—*Linguatula serrata* from Oryctolagus cuniculus, **Dollfus**; *Nettorhynchus armillatus* from cat, **Gretillat & Thiéry (4)**; Pentastomid in man, **Fain (4)**.

Omovampirism.—*Hyalomma detritum* ♂♂ parasitising ♀♀, **Uzakov**.

Host lists.—Entonyssidae in snakes, **Fain (13)**; Spinturnicidae, **Rudnick**; Acar. and Pentast. of African vertebrates, **Zumpt**; *Ixodes ricinus*, **Rosický et al (1)**; Ixod. of Senegal, **Morel**; *Ornithodoros capensis*, **Asanuma**; Parasites and hosts of Richelieu, France, **Dollfus**.

Hyperparasitism.—*Ornithodoros erraticus* var. *balozet* **Peinado Lucerna**.

Pseudo-parasitism.—*Tarsonemus hominis* and *Suidasia* sp. in spinal fluid of human, **Samšiňák & Jarry (2)**.

Host-parasite relationship.—Trombiculidae, **Daniel (1)**; *Tetranychus urticae*, **Fritzsche**; *Ixodes persulatus*, **Nikiforov**; Acar., **Mohr**.

Predator-prey relationship.—*Cheyletus eruditus* and *Acarus siro*, **Agric. res. Counc.**; *Cheyletus eruditus*, **Solomon**.

Relationship with Insecta.—*Myrmonyssus phalaenodectes, Ensliniella parasitica* and *Dinogamasus braunsi*, **Cooreman (1)**.

Experimental studies.—*Hannemania hegeneri* feeding on Rana pipens sphenocephala and R. palustris, **Hyland (1)**.

Transmission of disease.—*Trombicula pallida* and *Rickettsia orientalis*, **Asanuma et al**; Ecology of trombiculid vectors, **Audy**; Eriophyidae transmittors of virus, **Slykhuis**; *Rickettsia* by *Argas persicus*, **Roshdy**; *Haemaphysalis japonica douglasi* and encephalitis, **Belikova & Tatarinova & (1)**; *Lankesterella* by *Dermanyssus gallinae*, **Lainson**; *Dermacentor* and *Haemaphysalis* as vectors of brucellosis, **Volkova et al**; Ixodids as vectors of necrobacillosis, **Volkova et al (1)**; *Babesia divergens* by *Ixodes ricinus*, **Joyner**; Tularemia by *Ixodes ricinus*, **Rosicky**; *Ixodes ricinus*, **Babos**; *Ixodes ricinus*, **Babos & Eichler (1)**; *Ornithodoros coniceps* possible carrier of spirochaetosis, **Chagin & Dyatlov**; Spirochaetes isolated from *Ornithodoros zumpti*, **Zumpt & Organ (1)**; Bacillus pestis in *Rhipicephalus schulzei*, **Nelzina et al**; Tick vectors in Madagascar, **Gretillat**; Tick vectors in Madagascar, **Grjebine**; Tick vectors of encephalitis, **Blaškovič**; Tick vectors of encephalitis, **Morozov**; Tick vectors of disease, **Philip & Burgdorfer (1)**; Abstract of symposium, **Arthur (1)**; Acarine vectors and diseases caused, **Lapage**.

Experimental transmission of disease.—With *Haemogamasus liponyssoides hesperus*, **Furman et al**; *Dermacentor* as vector of *B. pestis*, **Polulyakh & Grebenyuk**.

Acari of medical importance.—*Dermatophagoides* sp. causing skin eruption, **Akbulatova**; Skin eruption by *Pyemotes boylei*, **Arnold & Haramoto**; Medical importance, **Ansari**; **Del Ponte**; **Masters**.

Acari of veterinary importance.—*Myocoptes musculinus* on the skin of host, **Watson**.

Technique.—Collecting, culture, preservation and preparation of Acari, **Evans et al**; Extracting Acari from nests and litter, **Eyseyeva**; Collection and registration of *Ixodes persulcatus*, **Boiko**; Collecting Oribatei, **Tarras-Wahlberg**; Collecting, preservation and culture of Acari, **Ryke (3)**; Salina floatation method for grain mites, **Sasa et al (3)**; Collecting and preservation of ticks, **Dzhaparidze**; Collecting and preservation of Acari, **Zumpt**; Collecting soil animals, **Kühnelt (1)**; Sampling pastures for ticks, **Wilkinson**; Collecting and preserving spider webs, **Porter & Porter**; Feeding ticks on laboratory animals, **Alekseenko**; Rearing *Rainbowia imperator*, **Southcott**; Observing and rearing Acaridae, **Radinovsky & Krantz**; Rearing of *Rhipicephalus appendiculatus*, **Bailey**; Rearing *Rhipicephalus secundus*, **Hadani et al**; Laboratory rearing of ticks, **Loomis**; Recovery of intranasal chiggers, **Yunker (1)**; Culture of chiggers, **Sasa**; Preservation of mites, **Eichler**; Preparation of spiders, **Peters**; Preparation of Acari for identification, **Dosse**; Conservation and preparation of Pantop, **Clémençon**; Bottle collector for marine waters, **Reish**; Funnel-type extractors for soil Acari, **Macfadyen**; Control of *Zygiella x-notata* for experimental work, **Erskine**; Models for exhibition, **Weidner**.

Behaviour.—*Leiurus quinquestriatus*, **Cloudsley-Thompson (4)**; *Galeodes arabs*, **Cloudsley-Thompson**; *Nephilengys cruentata*, **Bouillon**; *Xygiella x-notata*, **Evans**, R. E.; Running pattern of Uloboridae and Argiopidae, **Szlep (2)**; Aggregating of some species of spiders, **Kajak & Luczak (1)**; Rhythms in spiders, **Barrett**; Diurnal rhythms, **Cloudsley-Thompson (5), (6)**; Social spiders, **Wishart**; *Tetranychus urticae*, **Saba**; Trombiculid larvae, **Sasa**; *Arrenurus fissicornis* on dragonflies, **Mitchell**.

Acari of stored food and grain.—**Hughes**; **Krantz (1)**; **Sinha & (1)**; **Solomon**; **Osmun**.

Household pests.—Scorp., spiders, ticks and mites, **Michelbacher et al**; Acar., **Solomon**.

Control: excl. Tetranychoidea.—*Dermanyssus gallinae*, **Romasheva et al (1)**; *Larvacarus transitans*, **Latif & Muhammad**; *Myocoptes musculinus, Myobia musculi, Psorergates simplex*, **Bateman**; *Myocoptes musculinus*, **Watson**; *Phyllocoptruta oleivora*, **Johnson**; *Psorergates ovis*, **Du Toit & Fiedler**; Scabies of animals, **Wahby et al**; *Steneotarsonemus pallidus*, **Legowski**; *Tarsonemus laticeps*, **Collingwood**; *Tarsonemus laticeps*, **Harrison, I. R.**; *Trombicula autumnalis*, **Daniel & Cerva (2)**; Tyroglyphids, **Pulpán & Verner**; *Boophilus decoloratus*, **Larkin**; *Boophilus microplus*, **Corrêa & Gloss**; *Ixodes persulcatus*, **Levit et al**; *Ixodes ricinus*, **Babos**; *Ixodes*, **Smetanina**; *Otobius megnini*, **Harvey & Brethour**; *Otobius megnini*, **Tarshis & Ommert**; *Rhipicephalus evertsi*, **Whitehead & Baker (1)**; Acari on plants, **Jannone & Binaghi**; Ticks, **Drummond**; Ticks and mites, **Lapage (1), (3)**.

Control: Tetranychoidea.—*Bryobia praetiosa*, **MacCreary & Connell**; *Metatetranychus ulmi*, **Bua & Biagini (1)**; *Metatetramychus ulmi*, **Dosse (2)**; *Metatetranychus ulmi*, **Seifert (1)**; *Panonychus ulmi*, **Foott**; *Tetranychus telarius*, **Ascher & Cwilich**; *Tetranychus telarius* by *Phytoseiulus persimilis*, **Chant (1)**; *Tetranychus telarius*, **Frick**; *Tetranychus telarius*, **Henneberry et al (1), (2), (3)**;

Tetranychus telarius, **Hunter (1)**; *Tetranychus telarius*, **Lippold**; *Tetranychus urticae*, **Saba (1)**; *Tetranychus* spp., **Hoyt & Harries**; Tetranychidae, **Unterstenhöfer**; Spider-mites, **Boyer & Bell**; Red spider-mites, **Dicker & Muir**; Red-spider mites, **Kač.**

DISTRIBUTION

ARCTIC REGION

Arctic.—Aran, **Holm.**

PALAEARCTIC REGION

Iceland.—Acar., **Hughes (1).**

Great Britain.—Opil., **Dalton**; Opil., **Whiteley**; Aran., Opil., **Eggeling**; Aran., **Cooke**; Aran., **Cooke & Cotton (1)**; Aran., **Cotton & Cooke**; Aran., **Cragg**; *Scotland* Aran., **Crowson**; Aran., **Duffey**; Aran., **Hazelton**; Aran., **Locket & Millidge**; Aran., **Wild**; Aran., **Wood**; Acar., **Evans et al**; Acar., **Massee**; Acar., **Rowe**; Ixod., **Thompson & (1), (2)**; Hydrach, **Hynes.**

Scilly Is.—Aran., **Merrett & Rowe.**

France.—Pseudoscorp., **Beier (2)**; Aran., **Bonnet (1)**; Aran., **Denis (1), (2), (3), (5)**; Aran., Opil., **Dresco & (2)**; Aran., **Dresco (1)**; Aran., **Dresco & Jézéquel (3)**; Acar., **André**; Acar., Pentast., **Dollfus**; Acar., **Grandjean (2), (3)**; Acar., **Gretillat (3)**; Acar., **Rossi**; Acar., **Travé (1)**; Ixod., **Colas-Belcour & Rageau.**

Belgium.—Aran., **Kekenbosch & (1), (2)**; Acar., **Fain (6), (8), (10).**

Netherlands.—Aran., **Helsdingen**; Aran., **Hulsebos**; Acar., **Docters van Leeuwen**; Acar., **Jack**; Acar., **Rossem et al.**

Denmark.—Aran., **Bøggild**; Aran., **Heydemann**; Acar., **Southcott.**

Norway.—Acar., **Tambs-Lyche.**

Lofoten Is.—Aran., Opil., Acar., **Musson.**

Sweden.—Pseudoscorp., Opil., **Andersson**; Aran., **Hyltén-Cavallius**; Acar., **Schaarschmidt**; Acar., **Tarras-Wahlberg**; Acar., **Wahlgren.**

Lithuania.—Aran., **Vaitzkute**; Acar., **Eitminavichiute & (1).**

Latvia.—Acar., **Viksne.**

Estonia.—Aran., **Vilbaste**; Acar., **Daiter**; Acar., **Daiter & Kuzhil'ny (1)**; Ixod., **Kuzhil'ny.**

Finland.—Ixod., **Öhman.**

Portugal.—Pseudoscorp., **Beier (2)**; Opil., **Kraus (1)**; Acar., **Athias-Henriot (1)**; Acar., **Dosse (3)**; Acar., **Lombardini (2).**

Spain.—Pseudoscorp., **Beier (2)**; Opil., **Kraus (1)**; Acar., **Athias-Henriot (1)**; Acar., **Hirschmann & Zirngiebl-Nicol (1)**; Acar., **Travé (1).**

Gibraltar.—Aran., **Hazelton.**

Balearic Is.—Pseudoscorp., **Beier (2)**; Acar., **Athias-Henriot (1).**

Minorca.—Palpig., **Remy (1)**; Aran., **Denis.**

Italy.—Scorp., Opil., Aran., **Kritscher (2)**; Pseudoscorp., **Beier (4)**; Acar., **Athias-Henriot (1)**; Acar., **Filipponi & Pegazzano (3)**; Acar., **Foschi**; Acar., **Hammer (1)**; Acar., **Lombardini & (1), (2)**; Hydrach., **Nocentini**; Hydrach., **Ramazzotti & Nocentini.**

Corsica.—Acar., **Travé (1).**

Sardinia.—Acar., **Hirschmann-Zirngiebl-Nicol (1)**; Ixod., **Starkoff.**

Sicily.—Acar., **Athias-Henriot (1).**

Linosa.—Aran., **Roewer (5).**

Lampedusa.—Solif., Aran., **Roewer (5)**; Pseudoscorp., **Beier (5)**; Opil., **De Lerma**; Acar., **Lombardini (3).**

Switzerland.—Aran., **Dresco (4)**; Acar., **Fain & Aellen (21)**; Acar., **Schweizer.**

Austria.—Opil., **Gruber**; Acar., **Böhm.**

Hungary.—Palpig., Aran., **Loksa**; Aran., Opil., **Loksa (1)**; Acar., **Csiszár (1)**; Acar., **Eichler (1)**; Acar., **Farkas**; Acar., **Hirschmann & Zirngiebl-Nicol (1)**; Acar., **Kolulej**; Acar., **Mahunka**; Tardig, **Iharos & (1), (2)**; Tardig., **Varga.**

Czechoslovakia.—Scorp., **Táborský**; Aran., **Buchar & (1)**; Aran., **Buchar & Žďárek (2)**; Aran., Pseudoscorp., Opil., Acar., **Verner**; Acar., **Černý & (1)**; Acar., **Daniel (1)**; Acar., **Daniel & Brelih (3)**; Acar., **Halašková & Kunst (1)**; Acar., **Pulpán & Verner**; Acar., **Winkler**; Hydrach., **Láska & (1)**; Hydrach., **Štěpánek & Havlik**; Ixod., **Rosicky et al (1)**; Ixod., **Tovornik**; Tardig., **Bartoš.**

Yugoslavia.—Aran., **Wiehle (1)**; Acar., **Frank**; Acar., **Frank & Zivkovitch (1)**; Hydrach., Tardig., **Matoničkin.**

Germany.—Aran., **Braun & (2)**; Aran., Opil., Pseudoscorp., Acar., **Braun & Stadler (4)**; Aran., **Casemir & (1). (2), (3)**; Aran., **Crome & Crome & (1)**; Aran., **Heydemann (2)**; Aran., Acar., **Kepka & Schuster**; Aran., **Wiehle**; Acar., **Athias-Henriot (1)**; Acar., **Fritsch**; Acar., **Hirschmann & Zirngiebl-Nicol (1)**; Acar., **Karg (3), (4)**; Acar., **Popp**; Acar., **Rack & Weidner**; Hydrach., **Schwoerbel (1), (2)**; Halacarid., **Schulz (1)**; Hydrach., **Viets (3).**

Poland.—Opil., **Rafalski**; Aran. **Dziabaszewski & (1), (2)**; Aran., **Kajak**; Aran., **Mikulska & (1)**; Aran., **Pilawski**; Aran., **Proszynski & (1), (2)**; Acar., **Boczek**; Acar., **Micherdzinski & (1)**; Acar., **Rajski**; Acar., **Zukowski et al**; Hydrach., **Pierczynski & (1)**; Ixod., **Kolpy.**

Rumania.—Scorp., **Berbece**; Pseudoscorp., **Cîrdei & Gutu (7)**; Pseudoscorp., **Motaş**; Opil., **Cîrdei & (1), (2), (3), (4)**; Opil., **Cîrdei & Bulimar (5), (6)**; Aran., **Roşca & (1)**; Acar., **Feider & (1), (2)**; Acar., **Feider & Solomon (8), (9), (11)**; Acar., **Feider & Suciu (12), (13)**; Acar., **Volgin**; Hydrach., **Motaş & Tanasachi (3)**; Hydrach, **Motaş et al (5)**; Ixod., **Feider & Mironescu (3), (5), (6)**; Ixod., **Feider et al (7).**

Bulgaria.—Acar., **Kunst & (1)**; Acar., **Vasilev**; Ixod., **Drenski**; Tardig., **Iharos (3).**

Rhodes.—Pseudoscorp., **Beier (7).**

USSR.—Acar., **Bagdasaryan**; Acar., **Bregetova**; Acar., **Bulanova-Zachvatkina**; Acar., **Goncharova & Buyakova**; Acar., **Kadzhaya (1)**; Acar., **Komardina**; Acar., **Krasinskaya**; Acar., **Moskacheva**; Acar., **Petrov & Lyutov**; Acar., **Petrova**; Acar., **Prodan & Zaplyuisvichka**; Acar., **Reck & Kheladze**; Acar., **Savina**; Acar., **Shluger**; Acar., **Sitnikova**; Acar., **Volgin (1)**; Acar., **Vysotzkaya**; Acar., **Wainstein**; Acar., **Zemskaya & Piontkovskaya**; Ixod., **Adamovich**; Ixod., **Arzamasov**; Ixod., **Brovko**; Ixod., **Černý**; Ixod., **Chiang**; Ixod., **Dzhaparidze**; Ixod., **Filippova & (1), (2)**; Ixod., **Galuzo et al**; Ixod., **Grebenyuk**; Ixod., **Melnihova**; Ixod., **Mosolov**; Ixod., **Naumov**; Ixod., **Petrov & Lyutov**; Ixod., **Pospelova-Shtrom**; Ixod., **Sartbaev**; Ixod., **Sharipova et al**; Ixod., **Shluger, I. S.**; Ixod., **Skrynnik**; Ixod., **Smirin**; Hydrach., **Wainstein & (1).**

Azerbaijan SSR.—Acar., **Gadzhiev**; Acar., **Gadzhiev & Kireeva** (1).

Caucasus.—Pseudoscorp., **Beier** (8).

Georgian SSR.—Pseudoscorp., **Kobachidze** & (1); Acar., **Gomelauri.**

Kazakhstan.—Acar., **Shluger & Zhmaeva.**

Turkmenia.—Acar., **Semashko.**

Algeria.—Solif., **Panouse** & (2); Aran., **Roewer** (3); Acar., **Athias-Henriot** & (1), (2), (3), (4), (5); Ixod., **Colas-Belcour & Rageau.**

Libyia.—Aran., **Roewer** (3); Ixod., **Arthur.**

Morocco.—Scorp., **Arroyo**; Pseudoscorp., **Beier** (2); Aran., **Denis** (4); Aran., **Roewer** (2), (3); Acar., **Blanc & Ascione**; Acar., **Taufflieb** (1), (2); Acar., **Vercammen-Grandjean & Taufflieb** (1); Ixod., **Blanc & Bruneau** (1); Ixod., **Colas-Belcour & Rageau.**

Tripolitania.—Acar., **Jack** (1).

Tunisia.—Aran., **Roewer** (2); Ixod., **Arthur**; Ixod., **Colas-Belcour & Rageau.**

Egypt.—Aran., **Kritscher**; Aran., **Roewer** (2), (3); Acar., **Strenzke**; Ixod., **Hoogstraal & Kaiser** (3).

Sinai Peninsular.—Aran., **Roewer** (2).

Israel.—Ambly, **Kraus** (2); Ambly., **Robin**; Acar., **Costa** & (1); Acar., **Kohane & Hadani**; Ixod., **Feldman-Muhsam & Saturen** (2).

Arabia.—Acar., **Jack** (1).

Turkey.—Solif., **Roewer** (8); Acar., **Kurtpinar**; Ixod., **Mimioğlu & Yarar**; Ixod., **Parrish.**

Iran.—Ixod., **Abbassian-Lintzen.**

Persia.—Acar., **Jack** (1).

Afghanistan.—Pseudoscorp., **Beier**; Arach., **Lindberg**; Acar., **Cooreman**; Ixod., **Dias** (2).

Siberia.—Acar., **Volgin** (1).

Mongolia.—Acar., **André** (1).

China.—Acar., **Samšiňák.**

East China.—Acar., **Wen & Jeu.**

Korea.—Acar., **Chung**; Acar., **Kardos.**

Japan.—Scorp., **Isshiki & Yonezawa**; Pseudoscorp., **Morikawa**; Aran., **Furuuchi**; Aran., **Komatsu**; Aran., **Oi** & (1); Aran., **Yaginuma** & (1); Acar., **Aoki**; Acar., **Asanuma et al** (3); Acar., **Ehara** & (1), (2); Acar., **Kawashima & Kamo**; Acar., **Kimura et al**; Acar., **Kitamura** & (2), (3), (4); Acar., **Kitamura et al** & (1); Acar., **Kugoh & Kumada**; Acar., **Kumada**; Acar., **Kumada et al** (1); Acar., **Ono**; Acar., **Sasa** (1), (2); Acar., **Sasa & Osada** (4); Acar., **Sasa & Shingai** (5); Acar., **Yamaguchi et al**; Acar., **Yamaguti et al**; Ixod., **Asanuma** & (2); Hydrach., **Imamura** (1), (2); Ixod., **Kawashima et al.**

Ryu-Kyu Is.—Hydrach., **Imamura.**

Madeira.—Pseudoscorp., **Beier** (1); Aran., **Roewer** (3).

Canary Is.—Pseudoscorp., **Vachon**; Aran., **Roewer** (3).

Azores.—Pseudoscorp., **Beier** (1); Pseudoscorp., **Vachon.**

Ascension Id.—Pseudoscorp., **Beier.**

ORIENTAL REGION

India.—Aran., **Phanuel**; Aran., **Tikader** & (1); Acar., **Alwar & Lalitha**; Acar., **Gaud** (3); Acar., **Kanungo & Behura**; Acar., **Latif & Muhammad** (1); Pseudoscorp., **Murthy**; Acar., **Narayanan & Ghai**; Acar., **Narayaran et al** (2); Acar., **Puttarudriah & Channa Basavanna**; Acar., **Venkatraman & Sharma**; Ixod., **Rao et al.**

South India.—Acar., **Jack** (1).

Ceylon.—Palpig., **Remy** (7).

North Vietnam.—Acar., **Bregetova & Grokhovskaya** (1); Acar., **Grokhovskaya & Nguen-Xuan-Hoe**; Acar., **Grokhovskaya et al**; Acar., **Shluger et al** (1).

South China.—Acar., **Bregetova & Grokhovskaya** (1).

Malaya.—Ixod., **Kohls & Clifford** (1).

North Borneo.—Ixod., **Kohls & Clifford** (1).

Java.—Acar., **Balogh**; Acar., **Csiszar**; Acar., **Fain** (12), (13), (18).

Sarawak.—Ixod., **Kohls.**

Selangor.—Acar., **Fain & Domrow** (22).

Sumatra.—Aran., **Chrysanthus.**

Philippine Is.—Aran., **Chrysanthus**; Acar., **Delfinado**; Acar., **Fain** (13).

AUSTRALIAN REGION & POLYNESIA

Indonesia.—Acar., **Fain** (18); Ixod., **Cabrier da Silva.**

New Guinea.—Aran., **Chrysanthus**; Aran., **Kritscher** (1); Acar., **Balogh**; Acar., **Domrow** (1); Acar., **Fain** (18); Acar., **Hammen**; Acar., **Womersley** (3), (6).

Isle of Bouganville.—Acar., **Fain** (12).

Timor.—Ixod., **Cabrier da Silva.**

Australia.—Ixod., **Cabrier da Silva.**

Central Territory.—Acar., **Domrow** (1).

New South Wales.—Aran., **Goodwin**; Aran., **Gregg**; Aran., **Levitt**; Aran., **Rayment**; Acar., **Domrow** (1); Acar., **Southcott** (2); Acar., **Womersley** (3).

Northern Territory.—Acar., **Domrow** (1); Acar., **Southcott.**

Queensland.—Acar., **Brimblecombe & Roff**; Acar., **Domrow** (1), (2); Acar., **Fain** (12), (14); Acar., **Womersley** & (1), (3); Ixod., **Hall & Wilkinson.**

South Australia.—Acar., **Atyeo & Crossley** (3); Acar., **Banks**; Acar., **Domrow** (2); Acar., **Southcott** & (1), (2); Acar., **Womersley** (5).

Victoria.—Acar., **Domrow** (1); Acar., **Southcott.**

Western Australia.—Acar., **Southcott** (2).

Kangaroo Id.—Acar., **Womersley** (6).

Tasmania.—Acar., **Domrow** (1).

New Zealand.—Acar., **Atyeo & Crossley** (2); Acar., **O'Grady**; Acar., **Ryke** (1); Acar., **Womersley** (2); Ixod., **Dumbleton.**

Hawaiian Is.—Palpig, **Remy** (6); Acar., **Beardsley**; Acar., **Haramoto.**

Cook Is. & Niue. Aran., **Marples.**

Laysan Id.—Aran., Acar., **Butler.**

Marcus Id.—Aran., **Sakagami.**

Midway Atoll.—Scorp., Aran., Acar., **Suehiro.**

New Amsterdam.—Acar., **Grétillat** (1).

New Caledonia.—Ixod., **Rageau**; Ixod., **Rageau & Vervent** (1).

ETHIOPIAN REGION

Africa.—Acar., **Audy & Vercammen-Grandjean (1), (2)**; Ixod., **Hoogstraal et al (4)**; South of the Sahara, Acar., **Zumpt.**

West Africa.—Ixod., **Dias (1)**; Pentast., **Grétillat & Thiéry (4).**

Senegal.—Scorp., **Vachon**; Aran., Opil., **Roewer (4)**; Ixod., **Morel.**

Liberia.—Aran., **Roewer (2), (3)**; Acar., **Gaud (1).**

Ghana.—Acar., **Wallwork & (1), (2), (3), (4).**

Togo.—Aran., **Roewer (3).**

Cameroons.—Aran., **Roewer (2), (3)**; Acar., **Farkas (1)**; Acar., **Gaud**; Acar., **Gaud & Mouchet (2).**

Gaboon.—Aran., **Roewer (2).**

Angola.—Aran., **Roewer (2)**; Acar., **Balogh (4).**

Fernando Po.—Aran., **Roewer (3).**

South Africa.—Scorp., **Visser**; Acar., **Ryke & Meyer (6), (7)**; Ixod., **Theiler.**

Basutoland.—Aran., **Roewer (2).**

Cape Province.—Solif., **Brown**; Aran., **Roewer (2), (3)**; Acar., **Gaud**; Acar., **Meyer & Ryke**; Acar., **Ryke (2).**

Natal.—Aran., **Roewer (3)**; Acar., **Ryke (2).**

Transvaal.—Scorp., **Lawrence**; Aran., **Roewer (3)**; Acar., **Ryke & (2)**; Acar., **Ryke (4)**; Acar., **Meyer & Ryke & (5).**

Zululand.—Aran., **Roewer (2).**

Southwest Africa.—Aran., **Roewer (2), (3).**

Kalahari.—Aran., **Roewer (2), (3).**

East Africa.—Aran., **Roewer (2), (3)**; Acar., **Farkas (1)**; Acar., **Jack (1)**; Ixod., **Walker & (1), (2).**

Sudan.—Solif., **Cloudsley-Thompson (3)**; Opil., **Roewer (8).**

Abyssinia.—Aran., **Roewer (2), (3).**

Kenya.—Aran., **Roewer (2), (3)**; Acar., **Farkas (1).**

Tanganyika.—Opil., **Roewer (8)**; Aran., **Roewer (2), (3)**; Acar., **Benoit**; Acar., **Fain (16)**; Acar., **Farkas (1)**; Ixod., **Evans, A. C.**

Zanzibar.—Aran., **Roewer (3).**

Mozambique.—Aran., **Roewer (2), (3)**; Ixod., **Dias.**

Uganda.—Aran., **Roewer (2)**; Acar., **Robinson.**

Ruanda Urundi.—Opil., **Roewer**; Acar., **Fain (2), (10), (11), (13)**; Ixod., **Pierquin.**

Congo.—Opil., **Roewer**; Aran., **Roewer (2), (3)**; Acar., **Balogh (2), (4)**; Acar., **Fain & (13), (15), (17), (18), (19)**; Acar., **Krantz (2)**; Acar., **Lawrence (1)**; Acar., **Taufflieb**; Ixod., **Arthur (3)**; Ixod., **Kohls & Clifford (1)**; Ixod., **Pierquin**; Pentast., **Doucet & (1), (2)**; Pentast., **Fain (3).**

Nyasaland.—Ixod., **Arthur & Clifford (4).**

Rhodesia.—Aran., **Roewer (2), (3).**

Madagascar.—Palpig., **Remy (5)**; Aran., **Charézieux**; Aran., **Decary**; Aran., **Legendre & (2)**; Acar., **Rudnick**; Acar., **Samšiňák (1).**

Seychelles.—Aran., **Roewer (2).**

NEARCTIC REGION

Alaska.—Acar., **Lindquist.**

Canada.—Acar., **Holmes et al**; Acar., **Rudnick**; Hydrach., **Habeeb.**

British Columbia.—Aran., **Spencer**; Aran., **Turnbull**; Acar., **Keifer.**

New Brunswick.—Hydrach., **Habeeb (1), (2), (3).**

Nova Scotia.—Aran., **Dondale (1)**; Ixod., **Hall & McKiel.**

Ontario.—Acar., **Johnston & De Giusti.**

United States of America.—Aran., **Dondale**; Aran., **Levi & Levi (1)**; Aran., **Palmer**; Acar., **Axtell**; Acar., **Fain (12)**; Acar., **Higgins & Mulaik**; Hydrach, **Crowell (1).**

Eastern United States.—Ixod., **Clifford et al.**

Arizona.—Acar., **Keifer**; Acar., **Tuttle & Butler**; Ixod., **Kohls et al (3)**; Hydrach., **Habeeb (4), (9).**

Arkansas.—Acar., **Atyeo**; Acar., **Rudnick.**

California.—Scorp., **Stahnke**; Aran., **Gertsch (1)**; Acar., **Hunter**; Acar., **Keifer & (1)**; Acar., **Lindquist & Bedard (1)**; Acar., **Rudnick**; Acar., **Tuttle & Butler**; Acar., **Yunker**; Hydrach., **Cook & (1)**; Hydrach., **Habeeb (4), (7), (8)**; Ixod., **Kohls et al (3).**

Colorado.—Pseudoscorp., **Hoff.**

Connecticut.—Aran., **Anderson.**

Delaware.—Acar., **Tindall & Darsie.**

Florida.—Acar., **De Leon (3)**; Acar., **Fain (12),(13)**; Acar., **George**; Acar., **Muma & (1)**; Acar., **Muma et al (2)**; Acar., **Yunker.**

Georgia.—Acar., **De Leon (3)**; Hydrach., **Habeeb & (1).**

Illinois.—Ixod., **Mohr & Lord.**

Indiana.—Acar., **Osmun.**

Louisiana.—Aran., **Roddy**; Aran., Acar., **Hensley et al**; Acar., **Muma.**

Maine.—Acar., **Chant**; Acar., **O'Meara et al**; Ixod., **Clifford & Kohls (1).**

Maryland.—Acar., **Atyeo et al (1)**; Acar., **Keifer & (1).**

Massachusetts.—Acar., **Boyd & Dunning**; Acar., **Nutting**; Acar., **Treat.**

Michigan.—Acar., **De Leon**; Acar., **Ford**; Acar., **Hyland**; Acar., **Hyland & Ford (4)**; Acar., **Johnston & De Giusti**; Acar., **Lawrence et al**; Hydrach., **Cook (2).**

Mississippi.—Acar., **Keifer.**

Missouri.—Hydrach., **Habeeb (4).**

Montana.—Hydrach., **Cook.**

New Jersey.—Hydrach., **Habeeb (1) (2).**

New Mexico.—Acar., **George**; Acar., **Jameson.**

New York.—Acar., **Keifer (1).**

North Carolina.—Acar., **Davis, R.**; Acar., **De Leon (3)**; Hydrach., **Habeeb & (1), (2), (6), (7), (9).**

Ohio.—Acar., **Masters**; Hydrach., **Crowell.**

Oklahoma.—Acar., **Tonn.**

Oregon.—Acar., **Krantz**; Acar., **Muma**; Hydrach., **Cook.**

Rhode Island.—Ixod., **Hyland & Mathewson (4).**

South Carolina.—Hydrach., **Habeeb (1).**

Tennessee.—Arach., **Barr**; Acar., **De Leon (3)**; Acar., **Rudnick**; Hydrach., **Wilson.**

Texas.—Scorp., **McAlister (1)**; Aran., **McAlister**; Acar., **George & (1)**; Acar., **George & Strandtmann (2)**; Acar., **Jameson**; Acar., **Strandtmann**; Acar., **Thomas.**

Utah.—Acar., **Allred**; Acar., **Elzinga.**

Virginia.—Acar., **Fain** (1); Acar., **Keifer &** (1);

Washington.—Acar., **Keifer**; Hydrach,. **Cook.**

Wyoming.—Hydrach., **Cook** (1).

CENTRAL AMERICA

Central America.—Arach., **Kraus** (3).

Costa Rica.—Aran., **Chickering**; Acar., **Muma.**

Cuba.—Acar., **Woolley** (2).

Jamaica.—Aran., **Chickering** (1); Acar., **Woolley** (2).

Mexico.—Acar., **De Leon &** (1), (2); Acar., **Hoffmann &** (1); Acar., **Hunter**; Acar., **Rudnick**; Acar., **Woolley** (2); Ixod., **Kohls et al** (3).

Panama.—Aran., **Chickering**; Acar., **Brennan & Jones** (1); Acar., **Hirschmann & Zirngiebl-Nicol** (1); Acar., **Hunter**; Acar., **Yunker & Jones** (2).

Puerto Rico.—Aran., **Archer**; Acar., **Fox & Garcia-Moll**; Pentast., **Self & Garcia-Diaz.**

West Indies.—Aran., **Schmidt.**

SOUTH AMERICA

Argentina.—Opil., **Ringuelet**; Aran., **Galiano**; Aran., **Ibarra Grasso**; Aran., **Schiapelli & Pikelin**; Acar., **Lombardini** (2); Acar., **Travé.**

Brazil.—Scorp., **Matthiesen &** (1), (2); Scorp., **Pisa &** (1), (2), (3), (4); Aran., **Begak & Begak**; Acar., **Fain** (10), (12), (18); Hydrach., **Münchberg.**

Chile.—Opil., **Roewer** (7); Aran., **Gertsch**; Aran., **Zapfe**; Acar., **André** (2); Ixod., **Kohls & Hoogstraal** (2).

French Guiana.—Acar., **Fauran.**

Patagonia.—Acar., **André** (4), (5); Acar., **André & Lelièvre-Farjon** (6); Hydrach., **Motas & Tanasachi** (4).

Peru.—Acar., **Beck**, L.; Acar., **Brennan & Jones**; Oribat., **Hammer.**

Uruguay.—Scorp., **San Martin.**

Venezuela.—Ixod., **Vogelsang & Dias &** (1).

MARINE

Iceland.—Halacar., **Motas** (1), (2).

France.—Halacar., **André** (3); Halacarid., **Bénard**; Halacar., **Monniot**; Halacarid., **Weinstein.**

Black Sea.—Pantop., Hydrach., Tardig., **Valkanov.**

Maldive Is.—Pantop., **Clark**, W. C.

Indonesia.—Pantop., **Stock** (1).

New Guinea.—Pantop., **Stock.**

Philippine Is.—Pantop., **Stock** (1).

Chile.—Pantop., **Hedgpeth.**

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Permian.—? Scorp., **Brady.**

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Integument.—Chilop., **Semenova**; Formation and moult of Diplop., **Saudray.**

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Special structures.—Hypocerebral formation in *Tachypodoiulus albipes*, **Sahli.**

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Osmotic relations.—Cuticle of Chilop., **Semenova.**

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Secretion: internal.—Neuro-secretion with *Lithobius forficatus*, **Scheffel**; Protocerebral neurosecretion in *Scutigerella pagesi*, **Juberthie-Jupeau** (1).

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Pigments.—Connective tissue pigment in *Lithobius forficatus*, **Needham.**

Muscular activity.—Head of *Cylindriulus teutonicus*, **Fechter.**

Locomotion.—Walking and movement of Colobognatha, **Manton.**

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Sex ratio.—*Brachydesmus superus*, **Stephenson.**

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Moult.—*Lithobius fortificatus*, **Matic**; Diplop, **Saudray.**

Growth.—Tracheal system in *Lithobius forficatus*, **Kaufman (3).**

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Evolution.—Body segment of Chilop., **Becker, E. G.**; Diplop., **Manton (1).**

Chromosome studies.—*Otocryptops capillipedatus*, **Ogawa**; *Scolopendra subspinipes japonica*, *Bothropolys asperatus*, *Otocryptops capillipedatus*, *Esastigmatobius longitarsis*, **Ogawa (1)**; *Otocryptops sexspinosus*, **Ogawa (2)**; *Dicellophilus latifrons*, *Lithobius pachypedatus*, *Mecistocephalus takakuwai*, *Otocryptops curtus* and *Scolioplanes martinus japonicus*, **Ogawa (3).**

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Ecology.—Diplop. of Poland, **Stojalowska (1)**; *Strigamia maritima*, **Lewis (1)**; *Glomeris*, **Manzi**; Symph., **Edwards.**

Soil ecology.—Chilop., Diplop., **Schönborn**; Chilop., Diplop., **Verner.**

Ecological associations.—Diplop. associated with flowering skunk cabbage, **Judd**; Diplop. from nest of fly-catcher, **Silvere.**

Ecological associations: cavernicolous.—Chilop., Diplop., **Barr**; Diplop., **Causey (2)**; Chilop., Diplop., **Demange (1), (3)**; *Lithobius guerorguievi*, **Demange**; *Lithobius forficatus* and *Nopoiulus venustus*, **Loksa (4)**; Chilop., Diplop., **Lindberg**; Chilop., **Matic (1), (4)**; *Gervaisia* spp. **Condé & Demange (1)**; Diplop., **Hazelton**; Diplop., **Motas**; *Gravieripus atticus*, **Remy**; Paurop., **Remy (1)**; Symph., **Juberthie-Jupeau.**

Enemies.—*Strigamia maritima*, **Lewis (1).**

Symbiosis.—Schizophytes in intestines of Diplop., **Manier**; Protozoan in gut of *Xenobolus carnifex*, **Ganapati & Narasimhamurti.**

Commensalism.—Acar. with Myriap., **Dollfus**; *Glomeris—Armadillidum*, **Wettstein.**

Parasitism.—Gregarines, Nematodes and other parasites of Chilop. and Diplop., **Dollfus**; Gregarines from *Thyropygus miniusculus*, *T. nigrolobiatus* and *Strongylosoma* sp., **Rodgi & Ball.**

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Feeding habits.—*Strigamia maritima*, **Lewis (1).**

Mating habits.—*Brachydesmus superus*, **Stephenson.**

Nest building and oviposition.—*Brachydesmus superus*, **Stephenson.**

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Great Britain.—Chilop., **Blower**; Chilop., **Eason**; Chilop. **Lewis & (1).**

France.—Chilop., **Matic (4)**; Chilop., Diplop., **Demange (3)**; Diplop., **Demange (2)**; Diplop., **Mauriès & (1)**; Diplop., **Ribaut.**

Belgium.—Chilop., **Vendrix & Tercafs**; Diplop., **Queker.**

Sweden.—Chilop., Diplop., **Andersson**; Symph., **Scheller (4).**

Finland.—Chilop., **Lehtinen**; Diplop., **Lethinen (1).**

Spain.—Chilop., **Matic (4)**; Diplop., **Condé & Demange (1)**; Paurop., **Remy (1).**

Italy.—Chilop., **Magistretti & Ruffo**; Chilop., **Matic (1), (2)**; Diplop., **Manzi**; Paurop., **Remy (3).**

Switzerland.—Symph., **Scheller (3).**

Hungary.—Chilop. and Diplop., **Dudich**; Chilop., Diplop., **Loksa (1), (4)**; Diplop., **Loksa (2), (3).**

Germany.—Diplop., **Heydemann (1).**

Poland.—Diplop., **Stojalowska & (1).**

Czechoslovakia.—Chilop., **Matic**; Chilop., Diplop., **Verner**; Diplop., **Borek**; Paurop., **Chalupský & (1).**

Rumania.—Chilop., **Demange**; Chilop., **Matic (3)**; Diplop., **Motas**; Paurop., **Remy (4).**

Greece.—Paurop., **Remy.**

Lampedusa Id.—Chilop., **Manfredi.**

Minorca.—Chilop., Diplop., **Demange (1)**; Symph., **Juberthie-Jupeau**; Paurop., **Remy (1).**

Morocco.—Diplop., **Schubart (1), (2).**

China.—Diplop., **Hoffman (1).**

Korea.—Chilop., **Paik.**

Japan.—Chilop., **Murakami & (1), (2)**; Chilop., **Shinohara.**

Afghanistan.—Chilop., Diplop., **Lindberg.**

Iraq.—Chilop., **Chamberlin.**

Azores.—Diplop., **Condé**; Symph., **Scheller (1).**

Madeira.—Diplop., **Condé**; Symph., **Scheller (1).**

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India.—Chilop., **Chamberlin (1)**; Chilop., **Jangi.**

Taiwan.—Chilop., Diplop., **Wang (2)**; Diplop., **Wang (1).**

North Borneo.—Diplop., **Hoffman (2).**

Philippine Is.—Diplop., **Wang.**

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Australia.—Symph., **Scheller.**

Hawaiian Is.—Diplop., **Sugerman**; Symph., **Scheller (2)**; Paurop., **Remy (6).**

Laysan Id., Pacific.—Chilop., **Butler.**

Marcus Id., Pacific.—Chilop., **Sakagami.**

Midway Atoll, Pacific.—Chilop., **Suehiro.**

ETHIOPIAN REGION

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NEARCTIC REGION

North America.—Chilop., **Crabill (1)**; Diplop., **Causey (2).**

Florida.—Diplop., **Causey.**

Georgia.—Diplop., **Causey.**

Louisiana.—Chilop., Diplop., **Hensley et al.**

North Carolina.—Diplop., **Hoffman (4).**

Oregon.—Diplop., **Hoffman (3).**

South Carolina.—Diplop., **Causey.**

Tennessee.—Chilop., Diplop., **Barr;** Chilop., **Crabill.**

Utah.—Chilop., **Chamberlin (2).**

Virginia.—Diplop., **Hoffman (5).**

CENTRAL AMERICA

Central America.—Chilop. and Diplop., **Kraus (3).**

Guatemala.—Chilop., **Crabill (3).**

Mexico.—Chilop., **Crabill (1).**

Panama.—Diplop., **Loomis,** H. F.

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Brazil.—Diplop., **Schubart & (3), (4).**

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†*Adelophthalmus* (?) sp.. Lower Devonian, San Juan, Argentina p. 110 figs., **Kjellesvig-Waering (2).**

†*Angustidontus weihmannae* **sp. nov.** Upper Devonian, Alberta, Canada p. 38 figs.; *A.* sp. p. 37 fig., **Copeland & Bolton.**

†*Carcinosoma harleyi* **sp. nov.** Upper Ludlow, Shropshire, England p. 827 fig.; *C. punctatum* p. 828 figs., **Kjellesvig-Waering (1);** †*C. libertyi* **sp. nov.** middle Silurian, Manitoulin Id., Ontario p. 26 figs., **Copeland & Bolton.**

†*Dolichopterus asperatus* **sp. nov.** lower Devonian, Ohio p. 88 figs., **Kjellesvig-Waering;** †*D. bulbosus* **sp. nov.** Downtonian, Shropshire, England p. 831 figs., **Kjellesvig-Waering (1).**

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†*Eurypterus dekayi* p. 29 fig.; *E. fischeri* p. 30 figs.; *E. fischeri rectangularis* p. 30 fig.; *E. lacustris* p. 31 figs.; *E. laticeps* p. 32 fig., **Copeland & Bolton;** †*E. cephalaspis* p. 826 figs., **Kjellesvig-Waering (1);** †*E. remipes flintstonensis* p. 57 figs., **Leutze.**

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†*Nanahughmilleria* **subgen. nov.** see *Hughmilleria* p. 796, **Kjellesvig-Waering (1).**

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†*Stylonurus megalops* p. 832 figs., **Kjellesvig-Waering (1).**

†*Syntomopterus* **gen. nov.** Stylonuridae p. 91; type species *S. richardsoni* **sp. nov.** Lower Devonian, Ohio p. 93 figs., **Kjellesvig-Waering .**

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No record.

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Eukoenenia deceptrix **sp. nov.** ♀ Mahilaka, Madagascar p. 34 fig.; *E. depilata* **sp. nov.** ♀ Montagne d'Ambre, Madagascar p. 35 figs.; *E. necessaria* **sp. nov.** ♀ Tananarive, Madagascar p. 38 fig.; *E.* cf. *necessaria* ♂ p. 41 fig.; *E. trehai* **sp. nov.** ♂. ♀ Montagne d'Ambre, Madagascar p. 43 fig.; *E. fossati* **sp. nov.** ♂ Ambodihatafana, Madagascar p. 49 fig.; *E. ankaratrensis* **sp. nov.** Massif de l'Ankaratra, Madagascar p. 52 fig.; *E. meridiana* **sp. nov.** ♂. ♀ Ankitoko, Madagascar p. 57 fig.; *E. hanseni* p. 59 fig.; *E.* cf. *delphini* ♀ p. 55 fig.; *E.* sp. *a* p. 37 fig.; *E* sp. *b* p. 60 fig, **Remy (5);** *E. angusta* ♂ p. 112 fig.; *E. chartoni* ♀ p. 115 fig., **Remy (7).**

Koeneniodes malagasorum **sp. nov.** ♀ Nosy Be, Madagascar p. 62 figs., **Remy (5);** *K. madecassus* ♀ p. 117 fig., **Remy (7).**

RICINULEI

No record.

PSEUDOSCORPIONES

Catalogue of types in Natural History Museum, Basel. **Forcart.**

Faunal lists.—Azores and Madeira, **Vachon;** Japan with keys to suborders; families, genera and species, **Morikawa;** Colorado, **Hoff.**

Acuminochernes tacitus **sp. nov.** ♂ ♀ Larimer Co., Colorado p. 450 figs. **Hoff.**

Allochernes microti **sp. nov.** ♂. ♀ Schiraki-Steppe, Georgia SSR p. 149 fig., **Beier (8);** *A. pityusensis* **sp. nov.** ♂. ♀ N. Ibiza Id., Balearic Is. p. 35 fig., **Beier (2);** *A. japonicus* p. 147 figs.; *A. ginkgoanus* p. 147 figs., **Morikawa.**

Allochthonius (*U.*) *ishikawai* subsp. *kyushuensis* **subsp. nov.** ♂. ♀ Goya daiichi-do Cave, Ita, Japan p. 103 figs.; *A.* (*S.*) *undecimclavatus* subsp. *kishidai* **subsp. nov.** tritonym. Kurasawa-do Cave, Tokyo, Japan p. 106 fig.; *A.* (*A.*) *opticus opticus* p. 99 figs.; *A. opticus troglophilus* p. 100 fig.; *A.* (*U.*) *biocularis* p. 101 fig.; *A. ishikawai ishikawa* p. 102 figs.; *A. ishikawai shiragatakiensis* p. 102 fig.; *A. ishikawai uyamadensis* p. 103 figs.; *A. ishikawai uenoi* p. 103 figs.; *A. ishikawai deciclavatus* p. 104 fig.; *A.* (*S.*) *undecimclavatus undecimclavatus* p. 106 figs. ; *A. kobayashii kobayashii* p. 107 figs. ; *A. kobayashi dorogawaensis* p. 108 figs.; *A. kobayashii akiyoshiensis* p. 108 figs.; *A. kubotai* p. 108 figs.; key to species p. 97, **Morikawa.**

Allowithius ascensionis **sp. nov.** ♀ Ascension Id. p. 596 fig., **Beier.**

Amblyolpium japonicum **sp. nov.** ♀ Matsuyama City, Japan p. 130 figs., **Morikawa.**

Apocheiridium pinium p. 135 figs., **Morikawa.**

Calocheiridius libanoticus ♂ . ♀ new to Rhodes p. 141, **Beier (7).**

Cheiridium minor p. 134 figs., **Morikawa;** *C. museorum* new to Rumania p. 1, **Cîrdei & Gutu (7).**

Chelifer cancroides orientalis p. 151 figs., **Morikawa.**

Chernes cimicoides and *C. hahni* comparative morphology p. 100 fig., **Beier (6);** *C. horvathi* ♂ . ♀ p. 150 fig., **Beier (8).**

Chthonius irregularis **sp. nov.** ♀ Grotta di Pignone, La Spezia, Italy p. 125; *C. lanzai* ♂ p. 123 figs., **Beier (4)**; *C. tetrachelatus* p. 10 fig., **Cirdei & Gutu (7)**; *C. tetrachelatus*, distribution in Georgian SSR p. 166, **Kobachidze (1).**

Dactylochelifer balearicus **sp. nov.** ♂ . ♀ Playa Tirant Nou, Minorca p. 38 figs., **Beier (2).**

Dhanus afghanicus NOM. NUD. Ghar-Khvadjah ou Ghar-Bad Khaneh, Afghanistan p. 31, M. BEIER in **Lindberg.**

Diplotemnus egregius NOM. NUD. Tchachméh Cher, Afghanistan p. 31, M. BEIER in **Lindberg.**

Ditha marcusensis ♂ p. 93 figs., **Morikawa.**

Garypinus afghanicus NOM. NUD. Grotte Ides Tchehel Dokhteran; Chamchir ghar, Afghanistan p. 31, M. BEIER in **Lindberg**; *G. dimidiatus* ♂ . ♀ tritonym. new to Rhodes p. 141, **Beier (7).**

Garypus titanius **sp. nov.** ♂ . ♀ Bos'nbird Id., Ascension p. 594 fig., **Beier**; *G. japonicus* p. 131 figs., **Morikawa.**

Geogarypus (*G.*) *maroccanus* **sp. nov.** ♀ Xauen, Morocco, ♂ Beni Bajalo, Morocco p. 31 fig., **Beier (2).**

Halobisium orientale japonicum p. 119 figs., **Morikawa.**

Haplochernes boncicus hagai p. 144 figs., **Morikawa.**

Indolpium afghanicum **sp. nov.** ♀ Kouh-Qorough, Afghanistan p. 1 fig., **Beier (3).**

Kashimachelifer cinnamomeus p. 151 figs., **Morikawa.**

Kewochthonius paganus **sp. nov.** ♀ . ♂ N. Montezuma Co., Colorado p. 417 figs., **Hoff.**

Larca notha **sp. nov.** ♂ Larimer Co., Colorado p. 435 figs., **Hoff.**

Lophochernes bicarinatus p. 152 figs., **Morikawa.**

Megachernes ryugadensis subsp. *myophilus* **subsp. nov.** ♂ . ♀ Sasayama-cho, Hyogo Pref., Japan p. 146; *M. ryugadensis ryugadensis* p. 145 figs.; *M. ryugadensis naikaiensis* p. 145 figs., **Morikawa**; *M. afghanicus* NOM. NUD. Afghanistan p. 31, M. BEIER in **Lindberg.**

Microbisium confusum p. 432 figs.; *M. parvulum* p. 432 figs., **Hoff.**

Microcreagrella **gen. nov.** Syarinidae p. 70; type species *Obisium caecum* E. Simon ♀ p. 71 fig., **Beier (1).**

Microcreagrina **gen. nov.** Syarinidae p. 29; type species *Microcreagris maroccana* Beier 1931 p. 29, **Beier (2).**

Microcreagris balearica **sp. nov.** ♂ . ♀ Ria Cala Tirant, Minorca p. 27, **Beier (2)**; *M. caucasica* **sp. nov.** ♀ Rayon Mataradsa, Caucasus p. 148 fig., **Beier (8)**; *M. lanzai* **sp. nov.** ♂ Hohle " Buca del Fumo Inferiore," Toscana, Italy p. 125 fig., **Beier (4)**; *M. herculea* NOM. NUD. Grotte de Qal'éh-Malik: Grotte Lagat: Grotte Sri Tigheh, Afghanistan p. 31, M. BEIER in **Lindberg**; *M. japonica* p. 121 figs.; *M. macropalpus* p. 123 figs.; *M. microdivergens* f. *microdivergens* p. 124 figs.; *M. microdivergens* f. *mediocris* p. 124 figs.; *M. microdivergens* f. *rectus* p. 124 figs.; *M. pseudoformosa* p. 125 figs; key to species p. 120, **Morikawa.**

Minniza loyolae **sp. nov.** ♂ . ♀ Nungambakkam, Madras p. 221 fig., **Murthy**; *M. babylonica afghanica* subsp. NOM. NUD. Chamchir ghar, Afghanistan p. 31, M. BEIER in **Lindberg**; *M. cypria* ♂ . ♀ new to Rhodes p. 141, **Beier (7).**

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Muscichernes **gen. nov.** Chernetidae: Lamprochernetinae p. 140; type species *M. katoi* **sp. nov.** ♀ Shakujii, Tokyo, Japan p. 140 figs., **Morikawa.**

Neobisium (*P.*) *anagamidensis* subsp. *esakii* **subsp. nov.** ♀ Omogo-kei, Japan p. 116; *N. anagamidensis* p. 115 figs.; *N.* (*Parobisium*) *pygmaeum* **comb. nov.** p. 114 fig.; *N. magnum ohuyeanum* p. 113 figs.; key to species p. 113, **Morikawa**; *N.* (*N.*) *kobachidzei* **sp. nov.** ♂ . ♀ Kurortes Ledarde, Caucasus p. 146 fig., **Beier (8)**; *N. rhodium* **sp. nov.** ♂ tritonym. ♀ Lindos, Rhodes p. 140 figs., **Beier (7)**; *N.* (*Parobisium*) *vancleavei* **sp. nov.** ♂ . ♀ N. Montezuma Co., Colorado p. 427 figs., **Hoff.**

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Olpium intermedium NOM. NUD. Grotte N. of Nourgal, Afghanistan p. 31, M. BEIER in **Lindberg.**

Pachychelifer **gen. nov.** Dactylocheliferini p. 151; type species *P. caucasicus* **sp. nov.** ♂ Kobuleti, West Georgia SSR. p. 152 fig., **Beier (8).**

Paraliochthonius hoestlandi canariensis **subsp. nov.** ♂ Id. of Lanzarote, Canary Is. p. 98 figs.; key to species p. 101, **Vachon**; *P. hoestlandi* ♂ p. 69 fig. **Beier (1).**

Paratemnus japonicus p. 138 figs.; key to species p. 137, **Morikawa.**

Pselaphochernes balearicus **sp. nov.** ♂ . ♀ N. Palma, Majorca p. 33 fig., **Beier (2).**

Pseudogarypinus giganteus **sp. nov.** ♀ Weld. Co., Colorado p. 440 figs., **Hoff.**

Rhacochelifer corcyrensis ♂ . ♀ new to Rhodes p. 142, **Beier (7).**

Roncus (*R.*) *balearicus* **sp. nov.** ♂ . ♀ Tal von Biniaraix, Majorca p. 25 figs., **Beier (2)**; *R.* (*R.*) *glaber* **sp. nov.** ♀ Rayon Mataradsa, Caucasus p. 147 fig., **Beier (8)**; *R.* (*R.*) *chamberlini* **nom. nov.** pro *R. troglophilus* Morikawa 1957 praeocc. Beier 1931 p. 117; *R. chamberlini* subsp. *chamberlini* **subsp. nov.** ♀ Goyomatsu-dani-do Cave, Nara Pref., Japan p. 118 figs.; *R. chamberlini* subsp. *yosii* **subsp. nov.** tritonym. Shirataki Cave, Miyazaki Pref., Japan p. 118; key to species p. 116; *R. japonicus* p. 117 figs., **Morikawa**; *R. lubricus* p. 2 fig., **Cirdei & Gutu (7).**

Solinus japonicus p. 130 figs., **Morikawa.**

Stenowithius duffeyi **sp. nov.** ♂ . ♀ Bos'nbird Id., Ascension p. 597 fig., **Beier.**

Tyrannochthonius (*T.*) *madrasensis* **sp. nov.** ♀ . ♂ Tambaram, Madras p. 223 fig., **Murthy**; *T. japonicus dogoensis* p. 110 figs.; *T. takashimai* p. 110 figs.; key to species p, 108, **Morikawa.**

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Gnosippus anatolicus **sp. nov.** ♀ Kayseri, Anatolia p. 480 figs., **Roewer (8).**

Othoes saharae **sp. nov.** ♂ Beni Abbès, Algeria p. 176 figs., **Panouse;** *O. saharae* **sp. nov.** ♂ . ♀ p. 15 figs., **Panouse (2).**

Solpuga grindleyi **sp. nov.** ♀ . ♂ Table Mountain, Cape Province p. 577 figs., **Brown.**

Solpugyla kigoma **sp. nov.** ♂ Kigoma, Tanganyika p. 483 fig., **Roewer (8).**

OPILIONES

Revision of present system with key to subfamilies, **Šilhavý.**

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Faunal lists.—Spain and Portugal, **Kraus (1);** Leithagebirges and Hainburger Berge, Austria, **Gruber;** Poland, **Rafalski;** Rumania, **Cîrdei (4);** East Congo and Ruanda Urundi, **Roewer.**

BIANTINAE key to genera p. 42, **Roewer.**

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GONYLEPTOIDEA superfam. **nom. nov.** p. 265, **Šilhavý.**

GONYLEPTOMORPHI subord. nov. p. 265, **Šilhavý.**

LEIOBUNIDAE **fam. nov.** Dyspnoi p. 266, **Šilhavý.**

ONCOPODOMORPHI subord. nov. p. 265, **Šilhavý.**

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Allereca **gen. nov.** Assamiidae: Erecinae p. 13; type species *A. ruandana* **sp. nov.** ♀ Forêt Rugege, Ruanda Urundi p. 14 figs., **Roewer.**

Brigestus granulatus p. 77 fig., **Cîrdei;** *B. granulatus* p. 62, figs., **Cîrdei (2).**

Bukowina hormuzachii **sp. nov.** Brodina, Rumania p. 64 figs., **Cîrdei (2).**

Buniabia **gen. nov.** Assamiidae: Erecinae p. 35; type species *B. filipes* **sp. nov.** ♀ Bunia, Congo p. 36 fig., **Roewer.**

Cereatta kivuensis **sp. nov.** ♂ Itombue, Congo p. 37 fig.; key to species p. 37, **Roewer.**

Cheops leleupi **sp. nov.** ♀ Kivu, Congo p. 8 figs., **Roewer.**

Chilebalta **gen. nov.** Gonyleptidae p. 101; type species *C. angulipes* **sp. nov.** ♂ Chepu, South Chile p. 102 figs., **Roewer (7).**

Chilegyndes **gen. nov.** Gonyleptidae p. 101; type species *C. phillipsoni* **sp. nov.** ♂ . ♀ Munoz Gamero Peninsular, South Chile p. 101 fig., **Roewer (7).**

Chileogovea **gen. nov.** Sironidae p. 99; type species *C. oedipus* **sp. nov.** ♂ . ♀ Chepu, South Chile p. 100 figs., **Roewer (7).**

Comereca **gen. nov.** Assamiidae: Erecinae p. 34; type species *C. rectipes* **sp. nov.** ♂ Lubile: ♀ Kivu, Congo p. 34 fig., **Roewer.**

Dicranopalpus gasteinensis ♂ p. 302 fig., **Cîrdei & Bulimar (5).**

Egaenus convexus p. 90 fig., **Cîrdei;** *E. convexus* ♂ p. 76 figs., **Cîrdei & Bulimar (6).**

Ereca triareolata **sp. nov.** ♀ Forêt Rugege, Ruanda Urundi p. 20 fig.; *E. unicolor* **sp. nov.** ♀ Kivu, Congo p. 20; *E. affinis* p. 17 fig.; *E. maculata* p. 17 fig.; *E. modesta* p. 18 fig.; *E. rufa* p. 17 fig.; *E. simulator* p. 18 fig., key to species p. 17, **Roewer.**

Erecella biseriata **sp. nov.** ♀ Forêt Rugege, Ruanda Urundi p. 31 fig.; *E. nigropicta* **sp. nov.** ♂ . ♀ Kivu, Congo p. 29 fig.; *E. transversalis* **sp. nov.** ♀ Kivu, Congo p. 31 fig.; key to species p. 29, **Roewer.**

Erecomma laurenti **sp. nov.** ♀ Lubile, Congo p. 27 fig.; key to species p. 27, **Roewer.**

Erecula cincta **sp. nov.** ♀ Kivu, Congo p. 33 fig.; key to species p. 32, **Roewer;** *E. novemdentata* **sp. nov.** ♀ Kungwe, Tanganyika p. 487 fig., **Roewer (8).**

Fizibius **gen. nov.** Assamiidae: Sidaminae p. 12; type species *F. proprius* **sp. nov.** ♂ . ♀ Kivu, Congo p. 12 figs., **Roewer.**

Gyas annulatus p. 85 fig., **Cîrdei;** *G. annulatus* ♀ . ♂ p. 301 figs., **Cîrdei & Bulimar (5).**

Irumua **gen. nov.** Assamiidae: Erecinae p. 22; type species *I. caeca* **sp. nov.** ♂ Irumu, Congo p. 22 fig., **Roewer.**

Ischyropsalis lusitanica ♂ . ♀ p. 349 figs., **Kraus (1);** *I. taunica* p. 84 fig., **Cîrdei.**

Kobacoryphus **gen. nov.** Assamidae p. 34; type species *K. royi* **sp. nov.** ♀ Niokolo-Koba parc, Senegal p. 34 fig., **Roewer (4).**

Kungwea **gen. nov.** Assamiidae: Erecinae p. 488; type species *K. scabra* **sp. nov.** ♀ Kungwe, Tanganyika p. 490 figs., **Roewer (8).**

Lacinius ruentalis **sp. nov.** Ruente, Spain p. 355 figs., **Kraus (1);** *L. dentiger* p. 88 fig.; *L. ephippiatus* p. 88 fig., **Cîrdei;** *L. dentiger* ♂ p. 304 figs.; *L. ephippiatus* ♂ p. 304 figs., **Cîrdei & Bulimar (5).**

Leleupereca **gen. nov.** Assamiidae: Erecinae p. 14; type species *L. kivuana* **sp. nov.** ♂ Kabare, Kivu, Congo p. 15 figs., **Roewer.**

Liobunum rupestre p. 93 fig., **Cîrdei.**

Lukandamila **gen. nov.** Assamidae p. 486; type species *L. cookei* **sp. nov.** ♂ Lukundamila, Tanganyika p. 486 figs., **Roewer (8).**

Lygippulus nigrescens **sp. nov.** ♂ Musenabantu, Tanganyika p. 487 fig., **Roewer (8);** *L. setipes* **sp. nov.** ♀ Kivu, Congo p. 21 fig.; key to species p. 21, **Roewer.**

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Metaphalangium sudanum **sp. nov.** ♂ . ♀ Sinkat, Sudan p. 482 figs., **Roewer (8).**

Metereca concolor **sp. nov.** ♀ Kivu, Congo p. 26; *M. kivuna* **sp. nov.** ♂ . ♀ Kivu, Congo p. 27 fig.; key to species p. 24, **Roewer.**

Mitopus morio p. 87 fig., **Cîrdei;** *M. morio alpinus* new to Rumania p. 240, **Cîrdei (4).**

Nemastoma monchiquense **sp. nov.** ♀ Sierre de Monchique, Portugal p. 342 fig.; *N. roeweri* **sp. nov.** ♂ Pontevendra: ♀ Monte Ferro, Spain p. 341 figs.; *N. spinosissima* **sp. nov.** ♂ . ♀ Pamplona, Spain p. 345 fig., **Kraus (1);** *N. quadripunctatum werneri* p. 80 fig.; *N. quadripunctatum kochii* p. 81 fig.; *N. chrysomelas* p. 82 fig., **Cîrdei;** *N. nervosum* new to Rumania p. 81; *N. gigas gigas* new to Rumania p. 80, **Cîrdei (1);** *N. elegans elegans*, biology p. 69 fig., **Cîrdei (3).**

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Opilio parietinus p. 90 fig., **Cîrdei**; *O. parietinus* ♂ . ♀ p. 76 figs., **Cîrdei & Bulimar (6)**.

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Pseudogyndes marginata **sp. nov.** ♀ Chepu, South Chile p. 100, **Roewer (7)**.

Ptychosoma catalonicum **sp. nov.** ♂ . ♀ Gava, Barcelona, Spain p. 336 figs., **Kraus (1)**.

Sabacon simoni p. 347 fig., **Kraus (1)**.

Scotolemon roeweri **sp. nov.** ♂ . ♀ Algeciras, Spain p. 335 figs., **Kraus (1)**.

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Spinixestus siteteus **sp. nov.** ♂ Sitete, Tanganyika p. 486 fig., **Roewer (8)**.

Trogulus tingiformis new to Rumania p. 79, **Cîrdei (1)**; *T. tricarinatus* p. 79 fig., **Cîrdei**.

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Revision of Baum's Collection, **Buchar (1)**.

Faunal list.—Oak and pine woods, Scotland, **Crowson**; Inverness-shire and Morayshire, Scotland, **Locket & Millidge**; Sutherland, Scotland, **Wild**; Additions to Glamorgan, Wales, **Cooke & Cotton (1)**; Drente, Netherlands, **Hulsebos**; Capcir and Donnezan, France, **Denis (3)**; Jutland, **Bøggild**; Lithuania, **Vaitzkute**; Lower Rhineland, Germany, **Casemir (1)**; Wesel, Germany, **Casemir (3)**; Bohemia, **Buchar & Žďárek**; Lubliniec, Poland, **Pilawski**; Warsaw region, 49 species new to the region, **Prószyński**; Transylvania, Rumania with new records, **Roşca & (1)**; Tokara Is., Japan, **Yaginuma (1)**; Cook Is. and Niue, Pacific, **Marples**; Louisiana, **Hensley et al**; Louisiana, **Roddy**.

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CTENIDAE, arrangement in the system of the Araneae p. 397, **Homann**.

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LYCOSINAE key to genera p. 217, **Roewer (2)**.

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RHOICININAE, arrangement in the system of the Araneae p. 397, **Homann**.

TEXTRICINAE, arrangement in the system of the Araneae p. 397, **Homann**.

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ANTHRACOMARTI

No. record.

KUSTARACHNIDA

No record.

HAPTOPODA

No record.

TRIGONOTARBI

No record.

PHALANGIOTARBI

No record.

ARCHITARBI

No record.

PENTASTOMIDA

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15.	Pisces	15	0
16.	Amphibia	12	0
17.	Reptilia	12	0
18.	Aves	13	0
19.	Mammalia	18	0
20.	List of New Genera and Subgenera	5	0

* Obtainable only from the Commonwealth Institute of Entomology, 56 Queen's Gate, London, S.W.7.

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